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IRRATIONAL BELIEFS AT COUNTRY LEVEL FUNCTIONING: A CROSS-CULTURAL EXTENSION OF THE COGNITIVE-BEHAVIORAL MODEL

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Abstract
At individual level, irrational/dysfunctional beliefs are considered to be one of the important sources of psychological and mental health problems. Despite the fact that the Cognitive - Behavioral Therapy (CBT) model has the potential to explain human functioning at group level, almost no research has investigated if irrational/dysfunctional beliefs could be used to understand the differences between countries in terms of human functioning indicators. Using the methodology employed by cross-cultural research, we aggregated individual scores on two measures of irrationality that we have identified in the 6th wave of the World Values Survey. We combined the two items in a single irrationality index and correlated this index across N = 60 countries with the following aggregated or standalone indicators: national level autonomy, healthy life expectancy, human development, peacefulness, state of democracy, happiness and life satisfaction, as well as secular and emancipative cultural values). Results showed that, mirroring individual level analyses at country level, irrationality negatively correlated with most of these indicators. Almost all associations were in the medium and large effect size intervals. Yet, future studies using instruments with established psychometric properties are needed to verify these relationships and investigate their causal and temporal link. Our findings sustain the hypothesis that beliefs derived from the CBT model can be used to study cross-national differences at country level functioning and sets the stage for a new field of research covering this topic.

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Keywords: cross-cultural CBT, irrational beliefs, dysfunctional beliefs, country-level functioning, cultural values

Introduction

Cognitive-Behavioral Therapy (CBT) is widely known as the best scientifically documented framework of mental health and adaptive human functioning, as it has led to the development of most evidence-based psychological treatments available today ("Psychological Treatments – Society of Clinical Psychology", 2017).

The general model of CBT states that when individuals are confronted with an activating event (A), their subjective/emotional, behavioral, and/or psychobiological consequences (C) will not be directly caused by the event itself but rather by the beliefs (B) they hold in relation to that event. However, despite this common theoretical framework, some schools emphasize the primacy of certain beliefs in contrast to others and have developed different specific models for different disorders and psychological problems (Beck, 1979; Ellis, 1994). For example, the ABC model of the Rational Emotive Behavioral Therapy (REBT) (Ellis, 1994) – a core foundation component of CBT – states that when individuals are confronted with a negative life event and they hold irrational beliefs in relation to that event, they will most likely experience negative dysfunctional emotions (e.g., depression) and dysfunctional behavioral consequences (e.g., social isolation). On the contrary, if individuals hold rational beliefs in relation to the same event, they will then most likely experience negative functional emotions (e.g., sadness) and functional behavioral consequences (e.g., problem solving behaviors). The distinction between irrational and rational beliefs can be made by using three criteria. A rational belief is logically formulated, has empirical support and has a pragmatic value, helping individuals to follow their goals. An irrational belief on the other hand, fails to meet these criteria and therefore does not have logical coherence, it expresses a discrepancy in relation to reality, and is impeding the individual to follow the desired actions. This model has been supported in a large body of experimental (Cristea, Szentagotai, Nagy & David 2012; David, Schnur & Birk, 2004; Szasz, Szentagotai & Hoffman, 2011) and clinical studies (David Montgomery, Macavei & Bovbjerg, 2005; David, Szentagotai, Lupu & Cosman, 2008; Szentagotai, David, Lupu & Cosman, 2008). For a review see David, Lynn & Ellis, (2009) and Vişlă, Flückiger, Grosse & David (2016).

Despite its well-established scientific status in relation to individual functioning, the cognitive-behavioral model has not been investigated enough for its generalizability across various cultures. One of the founders of CBT, A. T. Beck (1999), has postulated almost two decades ago that society/country level aggressive and violent behaviors can be explained by looking at the beliefs held by the members of that society/country. However, this idea has drawn little to no attention of cross-cultural researchers. Most recently, two studies investigated the association between negative automatic thoughts, derived from Beck’s cognitive model, and dysphoria and
Irrational beliefs at country level functioning a cross-cultural extension...

depression, among Canadian and Egyptian individuals (Beshai, Dobson & Adel, 2012; Beshai, Dobson, Adel & Hanna, 2016). They showed that dysphoric and depressed individuals from both countries hold significantly more negative automatic thoughts compared to healthy individuals. Furthermore, both studies highlighted that Egyptian participants hold significantly more negative automatic thoughts than Canadian ones even after controlling for dysphoria and depression. Still, no research has used the cognitive-behavioral model using nations as units of analysis.

Political, economic, social, and health factors (PESH) have been proven to be related to human adaptation and functioning (Stevenson & Wolfers, 2008), including mental health (Layte, 2011; Murali & Oyebode, 2004), across different countries/cultures where the unit of analysis is still the individual. Yet, looking at the psychological characteristics of the individuals from a specific country/culture might contribute to a better understanding of the variations in human functioning or even new ways for improving it. For example, some recent research, stemming from personality psychology has shown that country/culture level-aggregated personality traits from the Big Five model are associated with various PESH indicators (McCrae & Terracciano, 2005) and that such aggregated personality characteristic might be used to explain the PESH discrepancies between different countries/cultures and/or regions of the same country (Rentfrow et al., 2013; Rentfrow, Jokela & Lamb, 2015). Thus, the core frontier idea is that the aggregated psychological characteristics should not only be related to PESH indicators in various geographical regions, but they could be conceptualized as mechanisms behind individual-level behavior that are expressed in terms of macro-level PESH indicators. Following the prediction derived from the CBT model of individual mental health and functioning, in the current study we investigate if country/culture level aggregated irrational beliefs can be used to understand the development and functioning of a given country. Although we assume a causal effect of irrational beliefs on human functioning, based on the theoretical model and individual level analysis, in this study we only focused on the relationships between these variables. Future studies are needed to prove if such causal effects also exist at country level.

Irrational beliefs and human functioning

CBT is an umbrella for many approaches that have similar assumptions about the role of cognitions and beliefs in mental health and human functioning. For the current study, we focus on one of the main pillars and founding approaches in CBT, namely Rational Emotive and Behavioral Therapy (REBT). The CBT/REBT model (Ellis, 1962; 1994) differentiates between four types of irrational beliefs that are considered to be at the core of many psychological problems. The first category of irrational beliefs is demandingness, which is expressed as formulating goals/desires in terms of absolutistic demands about the self, others, and life (e.g., “I/others/life must/should/need…”). Demandingness is an inflexible cognition (e.g.,
rigid thinking/psychological rigidity), considered to be a primary belief, with all the other irrational beliefs deriving from it. The second belief is awfulizing/catastrophizing and it is expressed as appraising a negative life event in an extreme manner and/or as the worst thing that can happen (e.g., “Losing my job is the worst thing that could happen”). The third belief is low frustration tolerance/frustration intolerance and it is expressed as considering an event as being unbearable (e.g., “I can’t stand being lied to”). The fourth and final belief is global evaluation of the self, others, or life and is reflected in judging a person (either oneself or others) or life globally, instead of appraising specific behaviors or events (e.g., “The fact that I lied means that I am a totally bad person”). Each of these irrational beliefs has its rational counterpart that is considered to have more adaptive emotional and behavioral consequences. Formulating flexible intense preferences, and accepting that they might not be fulfilled, is the rational belief opposed to demandingness (e.g., “I really wish and I do my best to make others be fair to me, but I can understand and accept that this might not always happen.”). Badness, meaning to appraise a negative event as being bad, but not the worst that can happen, is the rational belief opposed to awfulizing (e.g., “Losing my job is very bad, but it is not the worst thing that can happen to me and I can look for other solutions.”). The rational counterpart of low frustration tolerance is frustration tolerance, which is expressed as appraising an event as being unpleasant yet tolerable (e.g., “Being lied to is really unpleasant, but I can stand it and find solution to correct it.”). The rational alternative for global evaluation is specific evaluation together with unconditional acceptance of self, others, and life (e.g., “The fact that I had to lie was bad, but I can accept myself as a valuable human being and try to correct my behaviors in future.”).

The CBT/REBT model states that holding irrational beliefs, when confronted with a negative life event, will lead to dysfunctional negative emotional responses (e.g., depression, anxiety, anger) and dysfunctional behaviors (e.g., social withdrawal, avoidance, dependence, violence). On the other hand, holding rational beliefs in relation to the same event will lead to more functional negative emotions (e.g., sadness, worry, annoyance) and functional behaviors (e.g., problem solving, confrontation with feared situations, assertive behavior). When confronted with a positive life event (e.g., success), both irrational (e.g., “I always should be successful”) and rational beliefs (e.g., “I would like to be successful, but I accept that sometimes it might not happen”) will generate positive emotions, although their functionality might be different. Therefore, it is important to note that the consequences of rational and irrational beliefs differ more in terms of functionality, rather than in terms of valence. The goal of REBT and CBT in general, is to help individuals to recognize and modify irrational/dysfunctional patterns of thinking in order to achieve adaptive emotional, behavioral and physiological responses when confronted with difficult life events, rather than promoting mere positive emotional experiences (David et al., 2009; DiGiuseppe, Doyle, Dryden & Backx, 2013; Onac, Moldovan, Ign, Ungur & Onac, 2017). In CBT/REBT, mental disorders can be regarded in relationship with frequent and/or long-lasting dysfunctional emotions.
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and behaviors caused by irrational beliefs in relation to frequent and/or long-lasting life’s challenges, while subclinical problems can be represented by frequent and/or long-lasting functional emotions and behaviors caused by rational beliefs in relation to frequent and/or long-lasting life’s challenges. In this context, life problems refer to less frequent and/or short-lasting dysfunctional emotions and behaviors caused by irrational beliefs in relation to less frequent and/or short-lasting life’s challenges or (b) less frequent and/or short-lasting functional emotions and behaviors caused by rational beliefs in relation to less frequent and/or short-lasting life’s challenges.

Irrational and country/culture-level functioning

Based on the individual level CBT model, it can be argued that irrational/dysfunctional beliefs, endorsed by a large number of individuals belonging to a group, could have dysfunctional consequences for that group. For example, a large-scale negative event, such as a financial crisis, will represent a negative life event for a great number of citizens from a country affected by the crisis. If many of these individuals affected by the negative turn of events endorse irrational beliefs then they will likely experience dysfunctional emotions (e.g., anxiety) and behaviors (e.g., protesting behaviors). The larger the number of individuals that express such consequences, the greater the probability that these consequences will be reflected in the economic, social, and health indicators of a country. Beck (1999), for example, explained that aggressive behavior towards people outside a certain group, might be caused by a common irrational/dysfunctional belief of the group members, that the outsiders are bad or evil (in this case a global evaluation). In a similar manner, the residents of a single country might consider that the inhabitants of one of their neighboring states are dangerous and therefore have a hostile attitude which overtime could evolve into a conflict. Moreover, based on group processes documented by social psychology (e.g., conformity to group norms), irrational/dysfunctional beliefs might be spread within the group.

Aggregating psychological characteristics in order to describe a large group or a country is not very common in psychology, however, such an endeavor has been carried out in cross-cultural psychology and has broadened our understanding of many psychological, social, and economic differences between countries or regions within a country. Hence, moving CBT from individual level analysis to country/culture level analysis is rooted in modern cross-cultural research. For example, McCrae and Terracciano (McCrae & Terracciano, 2005) correlated the aggregated scores of personality traits (the average scores for all respondents in a country) with the dimensions of well-known cultural models, such as Schwartz’s (Schwartz, 1994) and Hofstede’s (Hofstede, 2001) models. They found that the theoretical predictions from the individual level analysis were confirmed by country/culture level analysis, hence, neuroticism was correlated with uncertainty avoidance, both reflecting a form of anxiety and extraversion, openness, and
agreeableness were negatively correlated with power distance and positively correlated with individualism. Regarding the associations with the values from Schwartz’s model, they found that openness to experiences and agreeableness were both positively correlated to autonomy and egalitarian values and negatively correlated with conservatism. Both these traits, together with extraversion, were positively correlated with economic indicators, namely Gross Domestic Product (GDP) and the Human Development Index (HDI). Rentfrow and his collaborators continued this type of research, but this time they looked at the distribution of personality traits and profiles across the regions of a country. They found that differences in the distribution of the five personality traits in Great Britain were associated with PESH and other indicators (Rentfrow et al., 2015). For instance, extraversion was positively associated with income, higher levels of education, a higher level of foreign residence and life expectancy. It was also negatively associated with health-related problems. Agreeableness, on the other hand, was negatively correlated with the same economic indicators, with the number of foreign residents, same sex relationships, and violent crime. It was positively associated with the number of individuals working in service, administrative and trade occupations and the number of married residents. For the United States, Rentfrow et al. (Rentfrow et al., 2013) found that different geographical regions defined by a dominant personality cluster have different PESH correlates. For example, what they called the “friendly and conventional region” present in the North-Central regions and South-East region of the U.S., characterized by high extroversion, agreeableness and conscientiousness and low neuroticism and openness, were negatively associated with wealth, human capital, innovation, social tolerance and health behaviors. The same cluster was positively associated with social capital. On the other hand, the “relaxed and creative cluster”, predominant in the West Coast, characterized by low extroversion, agreeableness and neuroticism, average conscientiousness and high openness had a reverse pattern of associations. Specifically, it was positively correlated with all economic indicators, with social tolerance, well-being and health behaviors and was negatively associated with social capital. However, the research conducted until now has ignored the role of cognitions and beliefs derived from the CBT model, despite their theoretical and practical potential.

Overview of the present study: Objectives and hypothesis

Conceptualized in a cross-cultural framework, the role of irrational beliefs in CBT can be examined in two important ways: (1) for its generalizability across various countries/cultures and (2) for its validity at group level (e.g., country/culture level). In the current study, we aim to investigate point 2, namely if irrational beliefs, derived from the CBT/REBT model, are associated with country-level functioning, following the theoretical prediction from individual level analysis.
To do so, we looked at the available international databases and searched for measures and items that reflect the rational vs. irrational contrast. We correlated these measures with relevant indicators of country level functioning used in previous research and that can mirror indicators used at individual level in relationship with irrational beliefs. We identified two items reflecting the distinction between rational and irrational beliefs in the 6th wave of the World Values Survey (WVS) (Inglehart et. al., 2014). We proceeded by computing an irrationality index for each available country by aggregating the scores of all individual respondents. Similarly, we calculated aggregated scores for indicators of human functioning from the same database such as autonomy, happiness, life satisfaction, cultural values and extracted other country level indicators from other sets of data, such as country-level healthy life expectancy, human development, peacefulness, and state of democracy.

Based on data from individual level analysis showing that irrational beliefs affect the functionality of human behaviors, we hypothesize that at country level analysis, irrational beliefs will be inversely related to autonomy, healthy life expectancy, human development, peacefulness, and state of democracy. Also, considering that irrationality is conceptualized in CBT as part of the individual’s culture, we expect a negative association between irrationality at country level and the dominant cultural values from Inglehart and Welzel’s cultural model, namely secular and emancipative values (Inglehart & Welzel, 2005).

Given that at individual level analysis irrational beliefs are not mainly related to the valence of our emotions, the relationship of irrational beliefs with happiness and life satisfaction at country/culture level analysis is investigated only exploratory.

Taking into account that we analyze representative samples for each investigated country, this is the most comprehensive study about irrationality and its relationships at country-level analysis.

Methods

Sample

The sample for this study was composed of \( n1 = 60 \) countries for which the irrationality measures were available in the 6th wave of the WVS. The total number of subjects for all the countries was \( N = 86,272 \) with an average of \( M = 1,437.87 \) of respondents per country. The age across all countries varied between 16 and 99 years, with an average of \( M = 42.09 \) years (\( SD = 16.57 \)) and a total ratio of 52.3% female respondents. Additional variables for the same countries were also extracted from the WVS and were measured on the same subjects. All the questions extracted from the WVS and used in the secondary analysis were addressed in all 60 countries. Additional data came from: the Global Health Observatory data, provided by the
World Health Organization ("Global Health Observatory data", 2015), where \( n_3 = 57 \) countries were extracted (excepting Palestine, Hong Kong and Taiwan), the United Nations Development Programme (2015), where \( n_4 = 59 \) countries were included in our analysis (except for Taiwan), the Institute for Economics and Peace (2014), where \( n_5 = 58 \) countries were available (with exception of Hong Kong and Palestine) and from The Economist Intelligence Unit (2015), where data was available for all \( n_6 = 60 \) countries. As all data was retrieved from publicly available international databases, no ethical approval was required for conducting this study as per institutional regulations.

**Measures**

Measures of irrationality, autonomy, subjective state of happiness and life satisfaction and cultural values were extracted from the 6th wave of the World Values Survey. WVS is a global research project that aims to investigate people’s values and attitudes towards a wide range of social, cultural, political and economic matters and explore how changes in individuals’ beliefs affect a nation’s political and social outcomes over time. The 6th wave of the WVS, from which we extracted the data for this study, took place between 2010 and 2014 and has included 60 countries and a total number of 86,272 respondents. Data from the WVS has contributed to important insights about the consequences of people’s shared beliefs and values on the effectiveness of a country’s government, economic development and evolution of democratic institutions (Inglehart & Welzel, 2005; Welzel, 2013). In the following section, we will provide a brief description of all the measures included in our analysis.

**Measures of irrationality**

For measuring irrationality, we first screened the questions from the 6th wave of WVS and identified four items that had an irrational phrasing. These items were then analyzed by two independent REBT supervisors from Albert Ellis Institute, New York, USA (the original site of the CBT/REBT). The experts had a 100% agreement over the content of these items, and they validated two of the items as reflecting an irrational content. We further used these items as measures of irrationality. The first question was “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” (question V24 in the 6th wave of the WVS), for which respondents were asked to answer by choosing between “Most people can be trusted” and “Need to be very careful”. Answering by choosing the second option (“Need to be very careful”) was considered to reflect an irrational belief due to its phrasing which suggested the idea of an inflexible demand or need in relation to how much other people can be trusted. For this question, the percentage of individuals that endorsed the irrational answering option was used as the index of irrationality for each of the countries taken into analysis. The second question was extracted from Schwartz’s universal values
group, where respondents were asked to indicate how much they identify to a fictional third person holding certain values or beliefs. The general instruction for this group of questions was: “Now I will briefly describe some people. Using this card, would you please indicate for each description whether that person is very much like you, like you, somewhat like you, not like you or not at all like you?” The specific question that we used for the present study was phrased as “It is important to this person to always behave properly; to avoid doing anything people would say is wrong” (question V77 in the 6th wave of the WVS). The answer options are coded on a Likert scale from 1 (very much like me) to 7 (not at all like me). A stronger affirmation of the similarity with the fictional person was considered to indicate an endorsement of an irrational belief that an individual should always behave properly, an absolutistic demand, in order to get other people’s approval. The Likert scale was reversed so that a higher score indicates a higher level of endorsement of the irrational belief, and the average score of all respondents in a country was considered as the index of irrationality for that country.

**Autonomy**

This variable was measured through the Autonomy Index (AI), extracted from the 6th wave of the WVS. The index is based on four items asking respondents to report whether or not they consider that children should be encouraged to endorse values related to autonomy, namely independence, determination/perseverance, obedience and religious faith (the answers for obedience and religiousness are reversed in the final score). This index is considered to indicate the degree to which one endorses autonomy as a personal value. In the final analysis, we included for each country the average score for all the participants in that country.

**Healthy life expectancy at birth**

Healthy life expectancy (HALE) is a measure conducted by the Global Health Observatory (GHO) ("Global Health Observatory (GHO) data", 2015), a World Health Organization (WHO) project that indicates the average years that a person is expected to live in full health, considering the years lost to disability.

**Human development**

To assess country level development, we used The Human Development Index (HDI) published by United Nations Development Programme (2015). This index includes economic, social and health indicators in order to quantify the development of a country. We included in our analysis the total score for each country as well as the four sub-scores that compose it: 1) gross national income per capita (GPI; in the total score, this indicator is transposed on a logarithmic scale in order to weigh down the relevance of economic differences), educational level and prospect, quantified as 2) average years of schooling of adults and as 3) average expectancy for years of schooling in the case of children reaching school age, and 4)
life expectancy, as a health related indicator. Higher scores on the total index and sub-indexes indicates higher development in a given country.

Country peacefulness

For quantifying country-level peacefulness we used the Global Peace Index (GPI) reported by the Institute for Economics and Peace (2014). This index is calculated based on 22 qualitative and quantitative indicators of violence, such as the presence of domestic conflicts and involvement in international conflicts (e.g., number of conflicts and deaths from both types of conflicts), objective (e.g., number of homicides) and subjective (perceived criminality) measures of societal safety, and militarization (e.g., yearly military expenditure, imported and exported weaponry). The data for the 22 indicators comes from other international databases, for example, the Uppsala Conflict Data Program from the University of Uppsala, International Institute for Strategic Studies Armed Conflict Database, Stockholm International Peace Research Institute Arms Transfers Database, etc. A lower score on the GPI for a given country indicates higher peacefulness for that country.

State of democracy

In order to measure the state of democracy of the countries included in this study, we used data from the Economist Intelligence Unit’s Index of Democracy (DI) (The Economist Intelligence Unit, 2015). This index was calculated using 60 indicators rated on a 0 to 10 scale and grouped in five different categories: electoral process and pluralism, civil liberties, the functioning of government, political participation, and political culture. The index for each category is calculated using the sum of all the indicators included in the category, converted to a 0 to 10 scale. The overall index is obtained by calculating the average scores of the five categories mentioned above. Data for measuring the state of democracy was extracted from three major sources: public opinion surveys, such as the World Values Survey, Gallup polls and other national surveys, voter turnout and the legislative power. A higher overall score indicates a higher state of democracy in a certain country.

Self-reported feeling of happiness

The measure for happiness was extracted from the 6th wave of the WVS. It was assessed through a single item (V10) for which respondents were asked to rate their overall feeling of happiness on a Likert scale from 1 (very happy) to 4 (not happy at all). For each country, we calculated an average score of all the respondents from that country.

Self-reported life satisfaction

The measure for life satisfaction was also extracted from the 6th wave of the WVS. Respondents were asked to answer to a single item (V23) by rating their
satisfaction with life on a Likert scale from 1 (completely dissatisfied) to 6 (completely satisfied). We adopted the same strategy as for happiness, and for each country we computed an average score for all the participants in that country.

_Inglehart – Welzel cultural values_

In their sequential theory of modernization, Inglehart and Welzel (2005) suggest that social transformations are characterized by the profound changes of values shared by the individuals of a society. For example, the transition from an agrarian society to an industrial one was accompanied by large-scale adoption of secular values. These values imply demystifying the sources of authority over people’s behavior. In the second phase, the transition from an industrial society to a post-industrial knowledge one, has facilitated the adoption and development of emancipative values, which proclaim freedom and equality of choice. Therefore, reducing sources of authority had as a consequence, the transfer of power in people’s hands. The authors point out that the desire to be free is universal among humans (Sen, 2001) but when individuals in a society live under existential pressure, emancipative values are disabled because they don’t serve any useful purpose. However, when existential pressures decrease, individuals discover more opportunities and extend their material, intellectual and connective/social resources. In this context, freedom of choice becomes instrumental and therefore valued on a wide scale. Thus, people’s behaviors are no longer controlled by external influences but by their own purposes and desires, which leads to the development of their abilities. The shared endorsement of emancipative values encourages the formation of civic entitlement, stimulates civic force and creates a new social capital (Welzel, 2013).

In this study, we investigated the association of irrational beliefs with secular and emancipative values. Data for the two types of values were extracted from the 6th wave of the World Values Survey. To measure the overall score of secular values, the authors used 12 items, grouped into 4 categories, based on which they calculated the distance of individuals from four types of authority: religious (whether respondents consider themselves religious, they value faith and the frequency of attending religious services) patrimonial (whether respondents feel pride of their nationality, consider it important to make their parents proud and think that a greater respect for authority is needed in their countries), state (trust in courts, police and army) and authority of conformity norms (the extent to which respondents’ answers are socially desirable). Secular values indicating an increased distance from these areas of authority were called agnosticism (increased distance from religious authority), defiance (increased distance from patrimonial authority), skepticism (increased distance from state authority) and relativism (increased distance from the authority of conformity norms).

As in the case of secular values, the overall score for emancipative values was calculated on the basis of 12 items grouped into three categories: autonomy
(whether respondents consider autonomy and imagination as an important child quality and did not consider obedience as a desired quality), choice (how acceptable are divorce, abortion and homosexuality for the respondent), equality (which refers to gender equality) and voice (whether respondents believe that the voice of individuals is an important source of influence in the society).

Results

Data extracted from the WVS was corrected for sampling errors based on the available weight. Descriptive statistics for main WVS data and country level scores for the variables extracted from other databases, for each country, are provided in the supplementary material (Table S1, S2).

Results have shown that the two indexes of irrationality were highly inter-correlated, with \( r(60) = .73, p < .001 \), suggesting that both are reflecting the same construct. Given that the two items are highly correlated, we combined them into a single irrationality index. All the correlational analysis described below were performed using this index.

The association between irrationality and indicators of human functioning

We performed Pearson’s zero order correlations between the irrationality index and all other indicators of human functioning. In order to control for Type I error, we applied the Bonferroni correction. A \( p \) value of .007 was required to reach the significance threshold. Results for the correlations of the irrationality with the main country-level human functioning indicators are presented in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>Irrationality Index</th>
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<tbody>
<tr>
<td></td>
<td>( r^a )</td>
<td>( p^b )</td>
<td>( n^c )</td>
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<td>Happiness</td>
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<td>.797</td>
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</tr>
<tr>
<td>Life satisfaction</td>
<td>-.088</td>
<td>.502</td>
<td>60</td>
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</tbody>
</table>

Note. * Statistically significant correlation; \( a \) Pearson correlation; \( b \) Statistical significance; \( c \) Number of countries.
The association between irrationality and cultural values

Given the human development viewed as economic prosperity and education is strongly related to the endorsement of emancipative and secular values (Welzel, 2013) we performed partial correlations between the irrationality index and these cultural values, controlling for HDI. We also applied Bonferroni correction, setting the significance threshold at .005. The partial correlational analysis showed that irrationality was significantly and negatively associated with both overall secular \( r(54) = -.63, \ p < .001 \) and emancipative values \( r(54) = -.381, \ p = .004 \), even when controlling for measures of human development.

Moreover we found a negative and significant association between irrationality and three of the sub-components of secular values, namely defiance \( r(57) = -.70, \ p < .001 \) and agnosticism \( r(54) = -.59, \ p < .001 \). We didn’t find any significant correlation between irrationality and relativism \( r(54) = -.35, \ p = .007 \) and skepticism \( r(54) = .07, \ p = .624 \). Irrationality negatively and significantly correlated with two of the sub-components of emancipative values, specifically autonomy \( r(54) = -.44, \ p = .001 \) and choice \( r(54) = -.42, \ p = .001 \). No significant association was found with equality \( r(54) = -.11, \ p = .421 \) and voice \( r(54) = -.145, \ p = .286 \).

Discussion

Overall, the results supported the idea that irrational/dysfunctional beliefs are associated with indicators of country-level functioning. As hypothesized, we found negative and significant correlations between the irrationality index and country-level autonomy, healthy life expectancy, human development and democracy. We did not find any significant association with country peacefulness, contrary to what we expected.

The magnitude of these associations was in the medium \( (r > .30) \) (Cohen, 1988) or large interval \( (r > .50) \). The largest effect size was present for the association between irrationality and Autonomy Index, crossing the \( r = .50 \) point \( (r > .50) \).

Both irrational items that were combined in order to obtain the irrationality index are related to interpersonal relationships and holding such beliefs on a large scale might affect interpersonal collaboration, which in turn alter the economic and social functioning of a country. It is easy to understand that in countries where a large number of individuals do not trust each other and do not cooperate, will have
lower economical outcomes and poorer educational and health prospects (either directly or mediated through the economical outcomes). The association between the irrationality index and country peacefulness was insignificant. Several studies showed that anger and aggression at individual level are predicted by a specific type of irrational beliefs, namely frustration intolerance (Fives, Kong, Fuller & DiGiuseppe, 2011; Vîslă et. al., 2016). In the present study, we only included items that reflect the construct of demandingness, as we did not have the means to measure other forms of irrational beliefs. Future studies should employ a frustration intolerance index as the main predictor of country-level peacefulness.

The irrationality index was significantly and negatively associated with the state of democracy. As in the case of emancipative values, the endorsement of an irrational thinking pattern might be linked to its utility under certain living conditions. For example, analyzing the evolutionary basis of irrational thinking, Pelusi (2003) suggests that irrationality could have been adaptive for humans living in our environment of evolutionary adaptiveness (EEA). Living under existential pressure, irrational beliefs may have had an adaptive value among important life domains such as physical safety, mating or protection of own status. Likewise, in the social conditions of an authoritarian society, holding irrational beliefs such as “I always have to behave properly” or “I need to be very careful in dealing with people” could help individuals to better adapt to the existing socio-political context and avoid social rejection or other forms of punishment. Thus, irrationality may become more activated among the population. As harsh conditions and existential pressure decrease, irrationality may reduce its adaptive function and so its levels decline. Further, lower levels of irrationality among individuals of a certain country can facilitate the rising and advancement of a democratic society. However, alongside the development of more advanced tools for measuring irrationality at country level, further research should investigate the nature of the relationship between irrational thinking and democracy.

The associations between the irrationality index and happiness and life satisfaction did not reach the significance threshold. This is not surprising, as irrational beliefs are supposed to be related to functional-dysfunctional dimension of emotions, not to the positive-negative dimension of emotions. Moreover, the CBT/REBT theory generally predicts that irrational / dysfunctional beliefs can lead to positive emotional experiences in the presence of positive life events. As we did not measure the occurrence of various positive and negative events, it is hard to definitively argue that irrationality is not related to happiness and/or life satisfaction.
Hence, future studies that investigate the relation between irrationality and happiness/life satisfaction should consider the activating events and the functionality of the generated positive emotions.

Irrationality was negatively correlated with overall secular and emancipative values. These results indicate that lower levels of irrationality among the citizens of a country are associated with a higher tendency towards people’s disjunction from external sources of authority and their assertion for freedom.

Our study has several limitations. First, its correlational and cross-sectional nature does not allow us to make any causal or temporal predictions about the relationship between irrationality and different indicators of country level functioning. Yet, following the theoretical model of CBT at individual level, we suggested that irrational beliefs might actually have a causal role in relation to these indicators. Future studies should determine if this prediction is accurate. Secondly, an important limitation is the fact that the measures of irrationality that we used in this study were extracted from available databases, namely the WVS, and were not directly built to assess rational and irrational beliefs. In their original forms, the two items that we coded as irrational were designed to measure generalized trust and Schwartz’s conformity cultural value. Our choice for these items was based on the correspondence between their content and CBT/REBT theory, based on experts’ evaluation and agreement. Finally, the relationship between irrationality and various outcomes at country level analysis should take into account the activating events and the functionality of the outcomes. Moreover, including rational beliefs in such analyses is fundamental.

Conclusion

As a general conclusion, these results support the idea that irrational beliefs endorsed by citizens of a given country may be used to understand several PESH indicators of that country. This study opens the door for a new field of research related to the cross-national applications of the CBT model of human functioning and mental health. Future studies, using dedicated reliable and valid instruments, as well as other research designs, could investigate other relevant indicators of country level functioning and have a more detailed analysis of the role played by irrational/dysfunctional beliefs in explaining these indicators.
Author Contributions

M.B.B. and D.O.D. designed the study. M.B. conducted data analysis. Both authors contributed to the academic writing of the article.

Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Supplementary materials

**Table S1.** Descriptive statistics for the main variables included in the study.

<table>
<thead>
<tr>
<th>Country</th>
<th>Trust (%) within country</th>
<th>Approval M (SD)</th>
<th>AI M (SD)</th>
<th>HALE M (SD)</th>
<th>HDI M (SD)</th>
<th>GPI M (SD)</th>
<th>DI M (SD)</th>
<th>Happiness M (SD)</th>
<th>LSI M (SD)</th>
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<td>Country</td>
<td>Trust (%) within country</td>
<td>Approval M (SD)</td>
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Note: M = mean and SD = standard deviation; AI = Autonomy Index; HALE = Healthy Life Expectancy at Birth; HDI = Human Development Index; GPI = Global Peace Index; DI = Democracy Index.
Table S2. Descriptive statistics for secular and emancipative cultural values.

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| Pakistan| 0.14                | 0.15             | 1197            | 0.19                   | 0.13                 | 1198              | 0.13                   | 0.33                   | 1195                   | 0.13                   | 0.33                   | 0.23                   | 0.13                   | 0.26                   | 0.13                   | 0.13                   | 0.12                   | 0.12                   | 0.12                   | 0.12                   | 0.12                   | 0.12                   | 0.12                   | 0.12                   | 0.12                   |
| Palestine| 0.16                | 0.16             | 992             | 0.24                   | 0.13                 | 998               | 0.13                   | 0.30                   | 991                    | 0.13                   | 0.30                   | 0.25                   | 0.15                   | 0.24                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   |
| Peru    | 0.14                | 0.15             | 1196            | 0.24                   | 0.13                 | 1195              | 0.13                   | 0.29                   | 1186                   | 0.23                   | 0.29                   | 0.23                   | 0.23                   | 0.27                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   |
| Philippines| 0.13               | 0.13             | 1200            | 0.24                   | 0.14                 | 1200              | 0.24                   | 0.29                   | 1200                   | 0.24                   | 0.29                   | 0.24                   | 0.24                   | 0.27                   | 0.24                   | 0.24                   | 0.24                   | 0.24                   | 0.24                   | 0.24                   | 0.24                   | 0.24                   | 0.24                   | 0.24                   | 0.24                   |
| Poland  | 0.15                | 0.16             | 953             | 0.19                   | 0.14                 | 952               | 0.19                   | 0.30                   | 946                    | 0.22                   | 0.30                   | 0.22                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   | 0.25                   |
| Qatar   | 0.10                | 0.01             | 1059            | 0.21                   | 0.27                 | 1059              | 0.21                   | 0.33                   | 1059                   | 0.13                   | 0.33                   | 0.13                   | 0.13                   | 0.13                   | 0.13                   | 0.13                   | 0.13                   | 0.13                   | 0.13                   | 0.13                   | 0.13                   | 0.13                   | 0.13                   | 0.13                   | 0.13                   |
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| Rwanda  | 0.12                | 0.15             | 1527            | 0.24                   | 0.11                 | 1527              | 0.24                   | 0.31                   | 1527                   | 0.10                   | 0.31                   | 0.10                   | 0.10                   | 0.10                   | 0.10                   | 0.10                   | 0.10                   | 0.10                   | 0.10                   | 0.10                   | 0.10                   | 0.10                   | 0.10                   | 0.10                   | 0.10                   |
| Singapore| 0.16                | 0.16             | 1970            | 0.24                   | 0.13                 | 1970              | 0.24                   | 0.26                   | 1972                   | 0.23                   | 0.26                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   | 0.23                   |
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| Slovenia      | 0.43                | 0.15             | 0.53                | 0.31             | 0.31                  | 0.58                 | 0.60                  | 0.58                | 0.74                  | 0.61                | 0.49                  |                     |                     |                  |                    |                  |                  |
| N             | 1061               | 1054             | 1053                | 1056             | 1047                  | 1059                 | 1069                  | 1049               | 1028                  | 1003               |                      |                     |                     |                  |                    |                  |                  |
| South Africa  | 0.41                | 0.17             | 0.24                | 0.66             | 0.51                  | 0.46                 | 0.51                  | 0.55                | 0.37                  | 0.40                |                      |                     |                     |                  |                    |                  |                  |
| N             | 3510               | 3531             | 3508                | 3488             | 3400                  | 3520                 | 3531                 | 3496               | 3451                  | 3531               |                      |                     |                     |                  |                    |                  |                  |
| South Korea   | 0.45                | 0.17             | 0.35                | 0.38             | 0.21                  | 0.15                 | 0.23                  | 0.24                | 0.24                  | 0.27                |                      |                     |                     |                  |                    |                  |                  |
| N             | 1200               | 1191             | 1196                | 1197             | 1199                  | 1199                 | 1200                  | 1187               | 1196                  | 1191               |                      |                     |                     |                  |                    |                  |                  |
| Spain         | 0.45                | 0.17             | 0.32                | 0.36             | 0.21                  | 0.16                 | 0.31                  | 0.21                | 0.26                  | 0.26                |                      |                     |                     |                  |                    |                  |                  |
| N             | 1186               | 1183             | 1180                | 1179             | 1173                  | 1184                 | 1189                 | 1177               | 1152                  | 1163               |                      |                     |                     |                  |                    |                  |                  |
| Sweden        | 0.50                | 0.16             | 0.28                | 0.38             | 0.19                  | 0.16                 | 0.27                  | 0.15                | 0.25                  | 0.28                |                      |                     |                     |                  |                    |                  |                  |
| N             | 1202               | 1194             | 1201                | 1178             | 1194                  | 1201                 | 1206                 | 1199               | 1160                  | 1197               |                      |                     |                     |                  |                    |                  |                  |
| Taiwan        | 0.35                | 0.15             | 0.28                | 0.37             | 0.19                  | 0.14                 | 0.23                  | 0.23                | 0.23                  | 0.25                |                      |                     |                     |                  |                    |                  |                  |
| N             | 1201               | 1189             | 1228                | 1201             | 1183                  | 1198                 | 1238                 | 1197               | 1172                  | 1192               |                      |                     |                     |                  |                    |                  |                  |
| Thailand      | 0.35                | 0.18             | 0.24                | 0.39             | 0.24                  | 0.14                 | 0.29                  | 0.26                | 0.20                  | 0.28                |                      |                     |                     |                  |                    |                  |                  |
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| Trinidad and Tobago | 0.28   | 0.09             | 0.24                | 0.20             | 0.57                  | 0.39                 | 0.31                  | 0.71                | 0.19                  | 0.37                |                      |                     |                     |                  |                    |                  |                  |
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| Tunisia       | 0.28                | 0.17             | 0.28                | 0.30             | 0.43                  | 0.28                 | 0.44                  | 0.39                | 0.14                  | 0.13                |                      |                     |                     |                  |                    |                  |                  |
| N             | 1181               | 1195             | 1204                | 1156             | 1144                  | 1188                 | 1205                 | 1180               | 1148                  | 1186               |                      |                     |                     |                  |                    |                  |                  |
| Turkey        | 0.24                | 0.15             | 0.26                | 0.35             | 0.30                  | 0.12                 | 0.29                  | 0.26                | 0.17                  | 0.20                |                      |                     |                     |                  |                    |                  |                  |
| N             | 1603               | 1591             | 1595                | 1602             | 1578                  | 1600                 | 1605                 | 1578               | 1575                  | 1575               |                      |                     |                     |                  |                    |                  |                  |
| Ukraine       | 0.47                | 0.16             | 0.43                | 0.52             | 0.59                  | 0.40                 | 0.38                  | 0.57                | 0.32                  | 0.32                |                      |                     |                     |                  |                    |                  |                  |
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<td>0.15 0.25 0.28 0.18 0.22</td>
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<td>Mean</td>
<td>0.27 0.04 0.52 0.36 0.17 0.30</td>
<td>0.11 0.17 0.32 0.35 0.16 0.24</td>
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<td>Uzbekistan</td>
<td>0.13 0.18 0.35 0.25 0.14 0.27</td>
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<tr>
<td>Mean</td>
<td>0.14 0.13 0.18 0.35 0.25 0.14</td>
<td>0.08 0.15 0.17 0.19 0.23 0.29</td>
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<tr>
<td>Yemen</td>
<td>0.14 0.13 0.19 0.44 0.24 0.12</td>
<td>0.15 0.26 0.25 0.19 0.24</td>
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<tr>
<td>Mean</td>
<td>0.14 0.13 0.19 0.44 0.24 0.12</td>
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<td>Zimbabwe</td>
<td>0.14 0.13 0.19 0.44 0.24 0.12</td>
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<td>0.14 0.13 0.19 0.44 0.24 0.12</td>
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</table>

*Note: SD = standard deviation; N = number of respondents.*

### References


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*Monica Bianca Bartucz, Daniel Ovidiu David*
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WHAT IS THE ADVANTAGE OF INTEGRATING DUAL PROCESS THEORIES AND COMPASSION FOCUSED THERAPY? IS THE MERGER A SUITABLE FRAMEWORK TO GAIN INSIGHT ON THINKING PERFORMANCES IN PSYCHOTHERAPY?

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Abstract
Background: About 2 million years ago, (pre) humans began to evolve a range of cognitive competences for reasoning. Research across disciplines (Barnard, 2009) has developed multiple levels of analysis related to cognitive reasoning, interlinking neural, mental and interpersonal levels influenced by social motives and emotions (Gilbert, 2014). The complexity of cognitive reasoning and the interaction between cognition and emotion is such that further understanding is needed in psychotherapy. The integration of widely recognised Dual Process Theories (DPT) and Compassion Focused Therapy (CFT), an evolutionary functional analysis of basic social motivational systems (Gilbert, 2014) provide an understanding of mechanisms that may not be adequately comprehended and formulated in psychotherapy.

Aims: The aim of this paper is to merge DPT and CFT in order to gain insight into reasoning in psychotherapy.

Method: Previous literature is reviewed, examined and summarised. Semi-structured interviews and observational data are also included.

Results: This paper suggests that System 1 is rooted in the Old Brain and can override System 2. As a result, this paper can make a contribution to psycho-education and treatment by helping clinicians and clients to recognise and understand why their ability to exert influence and self-regulate their thinking can be compromised.

Conclusion: Clinical implications and limitations are discussed.

Keywords: Dual Process Theory, Compassion Focused Therapy, CBT, Metacognition

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Introduction

The existence of two systems is well documented in literature and the development of Dual Process Theory (DPT) can be tracked back to James (1890) and Freud (1900). Both claimed that reasoning takes the form of two different modes of thought. Freud distinguished between an unconscious primary system, and a secondary system that is conscious and capable of rational thought. Epstein (1973, 1994) integrated aspects of Freud’s psychodynamic account in his Cognitive Experiential Self-Theory (CEST). The CEST was developed as a global theory of personality with two parallel systems. One is an information processor that is rational, affect-free, abstract and analytical, and the second is an experiential information processor that is emotionally driven. The theory claims that the two systems developed to fulfill different functional roles and in turn have distinct evolutionary histories. Many authors (Table 1) have worked on the principle that there are two different modalities of processing information, for which this paper refers to the most common terms in the literature: System 1 and System 2 (Kahneman & Frederick 2002, Stanovich 1999). Kahneman (2011) describes two different ways the brain forms thoughts:

- System 1: Fast, automatic, frequent, emotional, stereotypical, subconscious.
- System 2: Slow, effortful, infrequent, logical, calculating, conscious.

Table 1. Evidence of dual-system theory and main characteristics in literature.

<table>
<thead>
<tr>
<th>References</th>
<th>System 1</th>
<th>System 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schneider &amp; Schiffer (1977)</td>
<td>Automatic</td>
<td>Controlled</td>
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<tr>
<td>Fodor (1983, 2001)</td>
<td>Input modules</td>
<td>Higher cognition</td>
</tr>
<tr>
<td>Teasdale &amp; Barnard (1993)</td>
<td>Intellectual beliefs</td>
<td>Emotional beliefs</td>
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<tr>
<td>Hammond (1996)</td>
<td>Intuitive</td>
<td>Analytic</td>
</tr>
<tr>
<td>Nisbett et al. (2001)</td>
<td>Holistic</td>
<td>Analytic</td>
</tr>
</tbody>
</table>
Similarly to DPT, CFT shares the principle that there are two evolutionarily different modalities of processing information: an evolved rational brain (New Brain) and an emotion-driven brain (Old Brain).

![Old Brain/New Brain Interaction (adapted from Gilbert & Choden, 2013).](image)

**Figure 1.** Old Brain/New Brain Interaction (adapted from Gilbert & Choden, 2013).
DPT and CFT present convergent empirical and evolutionary evidence; the New Brain and System 2 are based on higher cognitions, whilst the Old Brain and System 1 are experiential information processors. In DPT, emotions have been explicitly linked to System 1 in some dual-process accounts (Epstein 1994). Epstein explains that when people are “highly emotional, [they] characteristically think in a manner that is categorical, personal, concrete, unreflective, and action oriented, and the stronger the emotion, the more they think that way and the more their thinking appears to them to be self-evidently valid”. CBT and other therapies focus on helping clients to identify their thoughts in order to replace them with new alternative rational thinking (BABCP, n.d.). However, if emotions in CFS are “our dominant system” (Gilbert, 2014), and the unconscious evolved and exists because it helped human beings to survive and thrive (Bargh, 2017), and if emotions provide the rationale for understanding the emotional nature of thoughts and are an adaptive form of information-processing in therapy (Greenberg, 2011), then it appears that DPT and perhaps CBT would benefit from an increased theoretical emotional input. In DPT, Evans’ review (2008) concludes that “many authors ignore emotion altogether”. When conscious thought (System 2) ‘adapts the old, animalistic ways of doing to the new demands of the cultural environment’ (Baumeister and Masicampo, 2010, cited Damasio, 1999; Edelman, 2004; Panksepp, 2005), every psychotherapist is presented with the challenge of understanding what System 2 does: its limitations, and how it is interlinked with social motives and emotions (Gilbert, 2014). For example, why might clients be fully aware of their thoughts, knowing they cause them emotional suffering, and yet be unable to change them? Why might human beings not be able to self-regulate their thinking? Whilst research is divided by the dichotomy: conscious thought does everything versus conscious thought does nothing (Baumeister and Masicampo, 2010), a convergent empirical unified theoretical approach may provide some different perspectives. As a result, this paper shows that integrating CFS and DPT provides a suitable framework to gain insight into human thinking performance and consequential clinical applications. Thinking performances have been examined, both from literature and from my psychotherapy practice, in Metacognition, Cognitive Distortions and Double Binds through 3 CBT interventions: Cognitive Restructuring, Socratic Questioning and the Downward Arrow Technique.

This paper is organised as follows:

1. Introduction
2. The problem of self-regulating thoughts in metacognition
3. The threat and self-protective system
4. Biased logical thinking in Cognitive Restructuring
5. Biases in Double Binds
6. Undoing the bias through ‘Socratic Questioning’
7. Undoing the bias through ‘The Downward Arrow Technique’ (DAW)
8. Conclusions, clinical implications and limitations.
The problem of self-regulating thoughts in metacognition

Gilbert (2014) introduced the concept of ‘tricky brain’, highlighting the paradox that although human beings evolutionally developed complex cognitive competences such as languages, use of symbols, logic, and abstractions, they also present “a down side” in that “we still have old brain emotions which can interfere with our new brain and our rationality” Gilbert (2014). This interference is also observable in the mechanisms of metacognitions, particularly when human beings can’t control their thoughts or cannot think logically. Flavell (1979) defined metacognition as knowledge about cognition and control of cognition. In other words: cognition about cognition or thinking about thinking. In 1991 a commercial airliner had to turn back because people ran screaming into the aisles when a mouse appeared on board, thereby endangering the aircraft. The degree of objective danger produced by their behaviour as calculated by their System 2 was apparently no match for the threat posed by the mouse, as assessed by their experiential System 1 (Epstein, 1994). That is, passengers were unable to respond logically, (evaluating the mouse as more dangerous or distressing), thereby endangering the aircraft. The Old Brain (System 1) overwhelmed the New Brain (System 2), and the passengers showed an example of a failure in metacognition (System 2). To further highlight the inefficiency of metacognition, I set up a little experiment on a social media platform and updated my status reporting the following quote: “Worry won't stop the bad stuff from happening, it just stops you from enjoying the good”. Among the comments, several allow us to build on our discussion:

Example 1
This is so true. Funny story today: As I was thinking negative [negatively] and worrying about all the things I didn’t want, I decided to [switch to] pointing out positive things. It made a MAJOR difference. It's just practice and your will to want to change.

The above person is able to recognise their thinking (I was thinking negatively and worrying) and to self-regulate it / control it (I did not want it, I decided to switch). This is supported by research, which has shown that individuals are able to “quickly shift attention away from something upsetting” (Boden & Baumeister, 1997). System 2 observes its own thinking and it is able to switch or change that negative thinking towards a preferable and more convenient thinking. If we think about the proverbial question: ‘is the glass half empty or half full?’, we can reflect and notice that some individuals, who are interpreting the glass as half empty, even though they recognise that it would be better to change their interpretation of their perception into ‘half full’, are nonetheless unable to do it. This is an example of how System 2 cannot always make efficient use of metacognition, showing an interference or difficulty of self-regulation and decision-making. This mechanism is documented by some other comments made in response to the social media statement:
Example 2

☐ I know this logically but it is hard to keep in the front of my mind when I am worrying so much.
☐ A lesson I should learn but can’t.

Is this evidence that System 1 emotional arousal is able to affect System 2? Emotions are commonly thought to have adaptive functions and System 1’s primary purpose is to keep us safe (Bargh, 2017), however the argument is far more complex because emotions have also sometimes been regarded as maladaptive (Oatley & Jenkins, 1996; Plutchik, 2003; Nesse & Ellsworth, 2009) and it has been highlighted that logic and emotions can be in conflict (Gilbert, 2010).

The threat and self-protection system

CFT and the threat and self-protection system (part of a three emotion regulation systems model) provide a rationale and a possible answer to the above questions. The threat and self-protection system evolved for detecting and responding to the interpretations of the threats in the world, like a mouse on an aircraft. This system is underpinned by the Hypothalamic Pituitary-Adrenal (HPA) axis, the sympathetic nervous system (activation and inhibition: for example, running and screaming into the aisles of the aircraft), immobilisation, regulated by the unmyelinated dorsal vagus nerve (Porges, 2007) and the neurohormone serotonin, all of which help to coordinate the physiological response to threat. Once these physiological changes are triggered, our bodies are urged into action to protect us from the threat (by fight, flight, freeze or submission).

![Diagram of affect regulation systems](image)

**Figure 2.** Three types of affect regulation system. From P. Gilbert (2009).
Bargh (2017) provides a convincing example of this protective mechanism: ‘if a bus is coming at you [threat], you know to jump out of the way [activating], and your nervous system helps you to do so, without you [System 2] having to order it to start pumping the adrenaline’. Automatic and affective evaluation (System 1) occur quickly and pervasively and are generally thought to be an integral part of perception (Haidt, 2001). The affective system has primacy in every sense: it came first in phylogeny, it emerges first in ontogeny, it is triggered more quickly in real-time judgments and it is more powerful and irrevocable when the two systems yield conflicting judgments (Haidt, 2001; Reber, 1993). It is now recognised that the threat system, our dominant system, creates the ‘negative bias’, able to affect our reasoning (System 2) and there are evolutionary reasons for it to do so (Baumeister et al, 2001). From Vatansever’s perspective (Vatansever et al, 2017) the Default Mode Network (DMN) contributes to an ‘autopilot mode’ (System 1) that makes memory-based predictions to aid (System 2) decision-making and spontaneous internal thoughts (Binder et al, 1999). Because System 1 and System 2 typically run in parallel and are capable of reaching different conclusions (Haidt, 2001), and because System 1 is the dominant system, this model contrasts with Beck’s original model (Beck, 1979), which suggested that emotion is a consequence of thought and supports Teasdale and Barnard’s model (1993) which proposes that automatic thoughts may be the consequence of a multi-system approach involved in the occurrence of emotion. Moreover, although automatic thoughts may contribute to maintaining the loop of depression, Beck’s original model (Beck, 1979), is unable to explain the problem of self-regulating thoughts in metacognition and why only some human beings are unable to adjust their automatic thoughts according to new evidence. Influential research supports the evidence that this may be due to the fact that emotion causes behaviours bypassing the role of cognitions (Loewenstein et al, 2001; Booth & Pennebaker (2000); Izard & Ackerman (2000); Salomon (2000); Frijda (1986). However, according to this analysis and integrating DPT and CFT, it is also possible to develop a more complex argument, that is, emotions (System 1) can both override and regulate cognitions (System 2) and the opposite, ‘cognitions [System 2] can regulate the individual’s ability to reason, reflect on one’s experiences and to simulate scenarios beyond the current moment’ (Damasio, 1999; Edelman, 2004). There is considerable evidence that attachment security and social safeness have profound effects on abilities to process social information, mentalise, and regulate affect (Fonagy et al., 2002) and that early affiliative relationships play a powerful role in influencing the maturation of a range of neurophysiological processes – especially the frontal cortex (Cozolino, 2007). However, one of the criticisms of DPT is that there is a continuum of processing styles, not discrete styles (Evans & Stanovich, 2013). Stanovich (2009a, 2009b, 2011) addressed this criticism proposing a tripartite model of mind: a set of autonomous systems (the source of System 1 processing), the algorithmic level of System 2, and the reflective level of System 2. The task of the algorithmic mind is to sustain decoupled representations...
(for purposes of inhibition or simulation, see Stanovich, 2011). In contrast, thinking dispositions are measures of the higher level regulatory states of the reflective mind. A DPT and CFT model supports the concept of continuous variation in cognitive ability, which is expressed through two different ways of reasoning (System 2 Drive and System 2 Safe, see Figure 3) and which is primed by System 1. The direct causation theory has also been challenged by research (Baumeister et al., 2007). The research group observed that it is commonsense that ‘fear makes you flee, anger makes you fight, and so forth’ as apposite to ‘anger directed her cognitive processing to focus disproportionately on certain possible outcomes’ or ‘fear temporarily reordered his goal priorities, causing him to abandon one goal in favor of the seemingly urgent albeit irrational goal of escaping the situation’. The authors suggest that emotions are a ‘feedback system’ for facilitating behavioural learning and control and they serve as a stimulus to cognitive processing.

Figure 3. Adapted from three types of affect regulation system, from Gilbert (2009). Reasoning 1 and Reasoning 2 are examples extracted from a treatment (Session 1 and Session 4), working with the same client. In Session 4, the client shows a more flexible style of thinking.
Since the threat system can override and affect reasoning, it follows that it becomes important to further examine, observe and reflect on the role of emotions and on the complexity of conflicting and dual reasoning in psychotherapy.

**Biased logical thinking in Cognitive Restructuring**

Cognitive Restructuring (CR) is the psychotherapeutic process of learning to identify and dispute irrational or maladaptive thoughts. Irrational or maladaptive thoughts are also known as Cognitive Distortions (CD). The concept of CDs, introduced by Aaron Beck (1963, 1964) and Albert Ellis (1962), is traditionally defined as fallacious reasoning, and plays a crucial role in the emergence of certain mental disorders. The CR three questions intervention is considered a part of a CBT technique utilised to help clients to change their way of thinking (Beck, 1995):

- What's the worst possible thing that could happen?
- The best possible thing that could happen?
- The most realistic?

An extract from a session:

T: What's the worst possible thing that could happen?
C: That’s the thing, I know that nothing is going to happen! It is completely irrational, I try to be the reasonable person… (in a tone of frustration)

This brief extract shows that changing the way of thinking does not always depend on metacognition or logical deductive reasoning. It is worth noticing that even information given by the therapist or authority may not cause any shift. Stott (2007) described this process as the head-heart lag, cognition-emotion mismatch, or Rational Emotional Dissociation (RED). He defined RED as follows:

*RED occurs when an individual concurrently holds two ideas in conscious awareness. One is “I believe X rationally” and the second is “It feels as if X is false.” Both ideas are afforded strong or total conviction, and X is any propositional statement. (p. 37).*

Gilbert (2009a) also explored this cognition-emotion mismatch with his clients. He recognised that although many clients are able to generate helpful and evidence-based alternative thoughts in a standard cognitive way, the emotional tone of these new thoughts is often laced with a variety of negative emotions and feelings, such as anger, contempt, disappointment, or coldness. In this mismatch they confuse explicit fully conscious verbal and conceptual knowledge with implicit, emotional, non-verbal knowledge.
Undoing biases in Double Binds

Berne (1966) focused on resistance to change and hence on clients who tend to sabotage therapy by describing the process: “why don’t you... yes but”. These are the clients who constantly go round and round with reasons for not being able to do something different, or why they can’t change. Teasdale and Barnard (1993) illustrate an exchange, where, by the end of the exchange, the therapist has been able to persuade the client that their thinking is ‘false’, and this acknowledgment has made the client more depressed in the process (Teasdale & Barnard, 1993). Biases in logical thinking and double binds show that the problem presented by the client (System 2) might not be the real problem (System 1), so what is it? In order to answer to this question, Teasdale and Barnard (1993) propose an interesting analysis of the difference between ‘intellectual beliefs’ and ‘emotional beliefs’, as in ‘I tell myself that I am a worthwhile person, but underneath I still feel worthless’. The authors suggest that information may be held at two different levels and they suggest that when working on the ‘emotional belief’ or ‘implicative level of meaning’, the client may need ‘to discover things for himself and that a focus on the therapeutic relationship in relationship to this and other issues might well be warranted (Beach & Power, 1996). This is also aligned to Rogers' core idea that “as material is given by the client, it is the therapist's function to help him to recognize and clarify the emotions which he feels” (Rogers, 1940). The following transcript might provide further clarification.

Due to his suicidal thoughts a client of mine decided to contact the crisis team:

C: “The crisis team meant reassurance, they believed me. They responded to my questions [attending] … am I pathetic, am I acting? Am I true? They weren't judging, they showed sympathy, they understood me while Friend X was trying to help me but he tried to solve the causes of my problems, but my problems are excuses, just an excuse. I worried when I was 11, when I was a kid… why should a child be worried?”

In this transcript a client describes two different interventions: from the crisis team and from a friend. The crisis team attends to the needs of the client, in a present, non-judgmental, understanding way, and shows characteristics close to empathy rather than sympathy (the word used by the client), care, kindness and safety. In CFT, the soothing-affiliative system evolved within early mammalian attachment relationships, and is associated with the myelinated ventral vagal nerve, which has been found to be important in the evolution of the parasympathetic nervous system, the regulation of the sympathetic nervous system and in facilitating social engagement (Porges, 2007). Consequentially, the soothing-affiliative system is sensitive to signals of care, kindness and safety. Neurophysiologically, this system is associated with the neurotransmitter endorphin and the neuropeptide oxytocin. Research has highlighted that oxytocin
plays an important role in bonding, trust and the regulation of HPA/threat system activity (Insel, 2010). Friend X, however, is motivated by the drive system (activating). The drive system evolved to motivate us to seek out and acquire important things that are helpful for our (and others’) survival and flourishing. It gives us bursts of pleasurable feelings which motivate and urge us towards things, and then further positive (reward) feelings when we achieve the thing we were aiming for, thus making it more likely that we engage in that behaviour again. The drive system is underpinned by the hormone dopamine, and is therefore an activating, high-energy system. However, the problem seems located in System 1, and it is the suicidal client himself who spells out that the problem is “an excuse”; that is, a biased cognition.

C: “…but my problems are excuses, just an excuse. I worried when I was 11, when I was a kid… why should a child be worried?”

The problem is not the real problem, but rather how System 2 (Drive System) responds to System 1. Stott (2007) reports that the lack of cognitive accessibility may acquiesce individuals to a putative alternative, rational belief. The social and intuitionist model of moral judgment (Haidt, 2001) also supports the idea that reason is often motivated and that reasoning constructs post hoc justifications. In integrating cognitive science and psychoanalysis, Bucci (2007) reports that ‘in generally less adaptive modes, a person may attempt to seek meaning [System 2 – Drive System] for the painful arousal [System 1] … by reinterpretting the arousal – for example, interpreting unacceptable anger as anxiety; or by turning it against the self in depression and suicidal attempts’. This phenomenon is also known in social cognition research and it shows that individuals often behave like ‘intuitive lawyers rather than intuitive scientists’ (Baumeister and Newman, 1994), and once they have even a single piece of bad evidence, they often stop their search, since they have a ‘makes-sense epistemology’ (Perkins, Allen, & Hafner, 1983).

**Undoing the bias through Socratic questioning**

The cognitive therapy literature often uses the term "Socratic method" interchangeably with "Socratic dialogue" or "Socratic questioning" (cf. J. S. Beck, 1995). Socratic questioning is a method of inquiry “based on the idea that all thinking has a logic or structure, that any one statement only partially reveals the thinking underlying it, expressing no more than a tiny piece of the system of interconnected belief of which it is a part ... Its purpose is to expose the logic of someone's thought” (Paul, 1990, p. 269). Previously it has been shown that adding more material to System 2 might not help clients to move forwards. It is therefore necessary to examine double binds with a different intervention. Socratic questioning by definition offers the possibility of pinpointing more than ‘a tiny piece of the system of interconnected belief of which it is a part’, for example:
Example 1
A client presents the goal of “losing weight” and then sabotages every possible attempt to lose weight. Therefore explicitly we have:

<table>
<thead>
<tr>
<th>System 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>I want to lose weight</td>
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</tbody>
</table>

Instead of “why don’t you” – intervention and material given by the therapist, Socratic Questions might be formulated in a similar way: So I notice that a part of you wants to change x and another part of you doesn’t. Is there any advantage in x? For example what happens if you don’t lose weight?

<table>
<thead>
<tr>
<th>System 2 emerging from System 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>the thinking underlying it</td>
</tr>
<tr>
<td>If I don't lose weight then I won't get attention</td>
</tr>
</tbody>
</table>

If it is true that “most people struggle with losing weight and keeping it off because no one ever taught them how to do it” (Beck, 2007), then Socratic questioning can also show that some other people may not lack discipline or teaching, they are resisting change because they don’t truly want to change. The possibility of losing weight is a threat (System 1) and not just desirable (explicit-declarative System 2). System 2 thinking can become so crystallised, structured and immobile to the extent that it can become an organization of personality. Greenberg (2011) states that the emotion is fundamental to the construction of the self and is a key determinant of self-organization. For instance, a client might wear the mask of a good daughter (System 2), build that image in herself and feel uncomfortable/guilty (System 1) when a thought or a behaviour doesn’t fit the way she thinks she should be (System 2). From this analysis and from the above example, it would appear that System 2 is broader than logical reasoning, and it would be able to inhibit and suppress (also through explanations ad hoc) implicit cognitive influences from System 1 (Wilson, 2002; Stanovich, 2004).

**Undoing the bias through The Downward Arrow Technique (DAW)**

The DAW (Burns, 1980) is a process of questioning which can also help to examine System 1.

DAW presents the format below:

- What is so bad about w? [answer – x]
- What is so bad about x? [answer – y]
- So what is so bad about y? [answer – z]
Example 2
A client presents with Chronic Fatigue Syndrome (CFS) and has the explicit goal of “learning to relax”, pace herself and be as effective as everyone else.
T: “What is so bad about resting when you feel tired?”
C: “I’d be lazy”
T: “What is so bad about being lazy?”
C: “I’d be a couch-potato”
T: “What is so bad about being a couch-potato?”
C: “I could lose my husband, he is so active”
T: “What is so bad about losing your husband?”
C: “I would be on my own”

Therefore we have:

<table>
<thead>
<tr>
<th>System 2 (Drive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I want to learn to relax</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System 2 (Safe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>If I relax then I will be on my own</td>
</tr>
</tbody>
</table>

Hence relaxing is threatening (System 1) and not just desirable (explicit-declarative System 2). It seems possible to observe that the human brain is capable of processing information in at least two possible states, explicit and implicit, and that these systems are repeatedly primed by System 1.

Conclusions, clinical implications and limitations

This paper suggests that it is advantageous to unite CFT and DPT theories in order to explain some psychological aspects of thinking. This paper seeks to bring awareness to clinicians, to stimulate a debate and to promote further investigation about the multiple levels of cognitive reasoning. I have examined the role of two different systems that are influenced by Three Emotion Regulation Systems and presented evidence that emotions can create the ‘negative bias’ that may be able to affect our reasoning (System 2). These observations strengthen research that conscious explanations of one’s behaviours are sometimes wrong (Nisbett and Wilson, 1977; Gazzaniga, (2003). It follows that it is advantageous for therapists to be aware that sometimes working with thoughts may be misleading. In CBT, ‘the main goals of cognitive-behavioural assessment are to diagnose disorders, discuss the goals of the treatment with the patient, plan the treatment,
and try to facilitate positive changes in the patient starting from the first encounters with the therapist’ (Goss et al, 2011). However, setting goals from the first encounter may be counterproductive because the client and the therapist may be misled by false explanations and jump to treatment too quickly. This is a very important aspect of clinical effectiveness in general and cost-effectiveness of CBT in NHS (or other public services), given that the mean average number of treatment sessions in NHS is limited and between 5 and 20 (NHS, n.d.). The overriding interplay between System 1 and System 2 was investigated through Cognitive Distortions and Double Binds. The Cognitive Distortions analysed through Cognitive Restructuring show that even when System 2 reflects on itself (metacognition) or acquires information (information given by the therapist or factual evidence), that acquired information may not always generate a shift in the perception of the problem (“I know it is not true, but I feel it is true”). This may happen because System 1 and System 2 typically run in parallel and individuals may reach different conclusions (Haidt, 2001). DPT and CFT facilitate an understanding that when human beings perceive a situation as threatening, logical thinking and metacognition can be biased. Socratic Questioning and the Downward Arrow Technique shows that the clients’ inability to self-regulate thoughts or behavioural responses may not always be due to lack of discipline or teaching, and that it is essential for clinicians to become aware that System 2 is broader than logical reasoning, and it is able to inhibit and suppress (also through ad hoc explanations) implicit cognitive influences from System 1 (Wilson, 2002; Stanovich, 2004). Different models have been adopted to work with the cognitive and emotional mismatch (Gilbert, 2010): identifying ‘roadblocks’ and their functions (Leahy, 2001); a need for a particular therapeutic relationship (Walling, 2007); developing mindfulness and acceptance (Haynes, et al., 2004; Liotti & Prunetti, 2010). This paper warns that when System 1 overrides System 2, the therapist must be able to create the conditions to reduce System 1 arousal in order to allow clients to inwardly order and explain their own data. The therapeutic implication is that therapists need to be able to understand and attune to their clients both emotionally - by considering a fundamental problem in an implicit emotional system (Gilbert, 2010) - and cognitively.

Clinically, by becoming aware of a fundamental problem in System 1, every psychotherapist is presented with the challenge of understanding the interplay between System 1 and System 2, the limitations of System 2 (e.g. post hoc justifications) and that System 2 is interlinked with social motives and emotions (Gilbert, 2014). An indication of the influence of System 1 / Threat System may be present and detectable in fallacious reasoning in two particular circumstances: 1) clients hold on to their beliefs even when faced with overwhelming evidence to the contrary; 2) clients are fully aware of their thoughts, they are aware that they cause them emotional suffering, and yet are unable to change them. Failure to distinguish explicit fully conscious verbal and conceptual knowledge (System 2) with implicit, emotional, non-verbal knowledge (System 1)
may determine an impasse in therapy or false beliefs such as “the client wants to change without changing anything”, the client is “not amenable to assistance” or might mislead the therapist to making ineffective interventions (for example blaming clients rather than assessing what the real issues might be (System 1) and how to engage with it. For example, Peck (1978) describes several scenarios from his practice in which the rationale of the process of change seems founded on helping people to take responsibility and to regain control over a problem. He reports the following fragment of a session in which the client avoids “assuming responsibility for personal problems”: the author states “I keep trying for a while”, the problem with alcohol persisted and the client was considered “not amenable to assistance”.

C: “There's nothing else to do in the evenings in Okinawa except drink”
T: “Do you like to read?”

Please note that in this first intervention the therapist is suggesting a solution to the client.

C: “Oh yes, I like to read, sure”.
T: “Then why don't you read in the evening instead of drinking?”.
C: “It's too noisy to read in the barracks.”
T: “Well, then, why don't you go to the library?”
C: “The library is too far away”.

The therapist tries again to add more information to System 2, which is promptly rejected by the client.

T: “Is the library farther away than the bar you go to?”
C: “Well, I’m not much of a reader. That's not where my interests lie.”

Houdé’s research (Houdé et al, 2001) confirms that “the training in logic per se is insufficient—‘too cold’—to trigger a biased-to-logical shift”. It follows that intervening only on System 2 may be less effective than working on both emotional and cognitive levels. As conscious thought is more of a ‘spectator’ and not a ‘participant’ (Baumsteirs & Masicampo, 2007), clients may become aware of their faulty logic and yet not be able to take action or change their thoughts. As a result they may feel frustrated for observing their irrationality, and even if they are not responsible, they are ‘persistently self-critical and show lack of compassion even if they are not in control of their thought processing’ (Gilbert, 2005). On the contrary, when working on both emotional and cognitive levels the therapist experiences unconditional positive regard for the client and empathic understanding (Roger, 1940) of the clients’ biased thoughts and core beliefs. Love, understanding, validation, affection are like vitamins for System 1 which give rise to feelings of reassurance, safety and connectedness (Gilbert, 2010) and this is essential to make the client feel safe when speaking. In providing such conditions, clients will discern, on an emotional and cognitive level, that they are safe and they won’t be judged (threat), and the more they experience this acquisition of safety the more they will move away from a static, fixed, unfeeling impersonal type of functioning (System 1 / System 2 Drive System). Finally they will move towards a way of
functioning marked by fluid, changing, acceptant experiencing of different feelings (System-2 Safe). This is different from reducing emotional arousal by helping clients to re-organise their data outwardly - “Well, then, why don't you go to the library?” (adding more information and providing a solution to the client). These considerations are close to Guidano’s description of psychotherapy (Guidano, 1991) as a conscious explicit restructuring (System 2), which consists in “transforming the continuous modulation of internal states [System 1] into patterns of self-understanding [System 2] that modify on-going immediate experience [System 1] and facilitate its further articulation [System 2]”. This is also what is advocated by Ehlers and Clark (2008), revisiting the trauma (System 1 implicit memory) with the aim of providing the client with updating (System 2) information (e.g. the trauma is over, you are safe now).

This study presents several limitations. Although this analysis sheds some light on the complexity of the multiple levels of reasoning, it would be advisable to conduct research which makes use of rigorous quantitative methods in order to measure when or to what extent System 1 emotional arousal is able to affect System 2 and its ability to regulate metacognition. Secondly, this study gives a false impression of homogeneity and it is unable to differentiate emotions. Systematic, standardised comparisons are needed, for example, are metacognitions affected by System 1 in the same way if triggered by fear or disgust? Thirdly, processing information has been explored almost as unilateral: from System 1 to System 2. It would be helpful to conduct further research from System 2 to System 1. For example, how might anticipating or simulating an emotion cause people to refuse to make advantageous and rational decisions? (Bar-Hiller & Neter, 1996).

Conflict of Interest Statement

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References


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COGNITIVE-BEHAVIORAL HYPNOTHERAPY AUGMENTED WITH VIRTUAL REALITY EXPOSURE IN FLIGHT PHOBIA: A CASE STUDY

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Abstract
This paper presents a case study of a 40-year old patient suffering from flight anxiety, treated using a brief cognitive-behavioral intervention augmented by virtual reality exposure therapy and by hypnotherapy. The treatment was delivered in an outpatient setting in 6 weekly sessions. The main treatment approach comprised systematic desensitization conducted in vitro (imaginary), during hypnosis and self-hypnosis sessions, as well as in virtuo (in virtual reality). To challenge catastrophic thoughts related to flight and to increase frustration tolerance, the patient was thought the ABC model and cognitive restructuring techniques derived from Rational Emotive Behavioral Therapy. Respiration techniques, hypnosis and self-hypnosis techniques were also applied in order to improve sleep quality. The clinical evolution of patient was positive.

Keywords: flight anxiety; hypnotherapy; self-hypnosis; virtual reality exposure therapy; Rational Emotive Behavioral Therapy

Introduction

The lifetime prevalence of simple phobia in the general population is over 10%. This mental health problem is more common in females, which account for up to 70% of the clinical cases (Ladouceur, Fontaine, & Cottraux, 1993). Patients with simple phobia have a limited daily activity and report lower levels of quality of life. In USA, phobias are considered to be one of the most frequent psychiatric
disorders (Goldberg, 2001). Most common simple phobias are those related to insects, mice, reptiles, water and other animals, like dogs. Most patients with phobias present somatic and physiological symptoms, such as pallor, tachycardia, sweating, difficulty breathing and hyperventilation, right before and during the encounter with the feared stimuli or situation. Even the mental representation or watching a TV program that reminds of the situational trigger can generate intense anxious responses. That is why the patient will avoid the phobic situations, which in turn will contribute to the maintenance of the symptomatology. This is the real struggle in the cases of clients suffering from clinically severe types of phobia. Basic phobias are relatively simply to treat, with 90% of them improving greatly or even disappearing after exposure methods (Lupu, 2012). Systematic desensitization, modeling participation and in vivo exposure are very effective treatments in phobic symptomatology (Cottraux, 1990). Some authors consider that whenever possible, it is best to apply directly in vivo systematic desensitization methods instead of using imaginary desensitization in the initial stages of the psychological treatment. Being able to successfully manage a real-life situation gives the subject a greater satisfaction and more self-confidence (Holdevici, 1998). In this context, the therapist and the client have to build together a hierarchy of feared situations, in order to conduct gradual exposure. However, direct exposure even to the situations at the bottom of this hierarchy might prove to be difficult in some cases. For example, in the case of flight phobias, the feared stimulus is not readily available, and in vivo exposure might imply additional costs.

Flight phobia is a relatively common mental health problem and has negative impact on the quality of life of patients suffering from this condition. The traditional form of treatment is time-consuming, expensive and could compromise the patient confidentiality. Classical exposure implies usually several trips to the airport and flights done by both the patient and the therapist. Beside high costs, this technique also poses a danger for the confidentiality of the therapeutic intervention. Virtual reality exposure therapy (VRET) is a technologically enhanced approach to exposure treatment that might overcome these limitations (Krijn, Emmelkamp, Olafsson, & Biemond, 2004; Rizzo, & Kim, 2005), as it can be done directly from the therapist’s office, at minimum costs. During the session, the patient will receive a special equipment which has the ability to transpose him or her right in the middle of the stressful event. VRET is based on cognitive-behavioral therapy (CBT) principles and it presumes real-time exposure in a 3D virtual world. With the help of a few special devices (headphones, glasses, gloves, etc.) the patient acquires the feeling that he is physically present in the computer-generated environment. Moreover, he or she can touch or move objects, hear, and depending of the equipment, feel smells or develop sensitive sensations. The moves of the patient are transmitted to computer through using different sensors (e.g., trackers) and represented in real-time in the virtual environment, which increases the level of presence in the virtual world (David, Matu, & David, 2013). Empirical evidence indicates that using virtual reality as a tool to conduct exposure in flight anxiety is
an efficacious intervention (Cardoș, David & David, 2017). Moreover, virtual reality has been successfully integrated with other techniques derived from CBT, such as hypnosis (Enea, Dafinoiu, Opriș, & David, 2014), make it a flexible and viable tool to provide interventions that are tailored to the patients’ needs and case requirements.

Further we will present a cognitive-behavioral intervention in a case of flight phobia for a female patient at the age of 40 years old, according to methodology proposed by David and McMahon (2001).

Case study

Case history, clinical conceptualization and treatment.

Case history.

“Maria” is a 40 years old client, with higher education, living in a big Transylvanian city, where she lives together with her husband and her 8 years old son. She contacted our office soliciting psychotherapy sessions for flight phobia. The psychotherapeutic approach was done in an outpatient setting, within 6 therapy sessions, carried out throughout 1 session each week. Between the forth and the sixth session we included one meeting during which we applied 2 consecutive exposure procedures using a Virtual Reality (VR) soft specially designed for the treatment of flight phobia.

The symptomatic manifestations of the clients’ phobia included increased levels of fear related to air travel, expressed through excessive anxiety (emotional symptoms) even in response to thoughts related to the idea of flight. These emotional reactions were consistently accompanied by tingling sensations in her hands, tremble, headaches, hasty respiration (hyperventilation), and muscular tightness (physiological symptoms). In response to these unpleasant physiological symptoms that were perceived as being out of her control, she cancelled her flight to her brother, which lives in Canada and who invited her there every year for the last 5 years (behavioral symptoms).

She wrongly thought that air travel represents a great dangerous, and as a consequence she will experience a state of sickness, and eventually she will feel really ashamed of the whole situation (cognitive symptoms). These symptoms started approximately 5 years ago, after she heard a news about a plane crash, but worsened in the last three months, after her brother renewed this invitation and once more, she had the chance to fly to Canada.

Due to the problems described above, lately “Maria” presented irritability, low frustration tolerance and insomnia. Regarding her personal physiological and medical pathological history, there were no special concerns.

As a psycho-type, Maria described herself as an emotive person, sociable and extroverted. After the psychiatric interview, she obtained a Phobic anxiety
disorder diagnosis (Specific phobia-flight phobia), code 325 (F40.2), according to WHO’s classification criteria (ICD-10) (1992).

This disorder appeared on the background of a personality with anxious notes, and of a good cognitive functioning. Before starting the therapy, we evaluated her anxious and depressive symptoms using the Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983). She obtained a score of 14 on the anxiety scale and a score of 5 on the depression scale, as values above 11 indicate significant levels of psychological impairment.

**Conceptualization.**

**Precipitating factors.** The stress related to the fact that she was once again invited to fly with the plane to her brother in Canada, determined indisputably, an increase in levels of anxious symptoms, which lasted for approximately five years now.

**Current cognitions and behaviors.** The current and most stressful problem for “Maria” was the possibility of air travel, which caused palpitations, hyperventilation, trembling and general somatic discomfort. In the same time, the following automatic thoughts appeared: “The flight with the plane is so dangerous and I will get sick and I will be ashamed.” Consequently, “Maria” resorted to avoiding the plane flight for a period of 5 years.

**Longitudinal analysis of cognitions and behavior.** “Maria” was raised in a family in which the mother exhibited anxious and overprotective behaviors. From an early age, the client displayed an adequate behavior in kindergarten, being very sociable. The traumatic event, respectively hearing the news about the plane crash with 2 months before her flight to Canada, initiated an avoidance behavior, which led her to cancel her flight.

**Aid elements for therapy and negative reinforcements.** “Maria” has a good intellect and an excellent somatic health. She started to present symptoms of flight phobia 5 years ago, after hearing a news about a plane crash. The coping mechanism used by her was avoiding air travel.

**Work hypothesis.** “Maria” presented flight phobia for 5 years, reactivated with 3 months before the moment of our first evaluation, by the presence of the erroneous thoughts, linked to generalization of the idea that air travel is dangerous. In addition, her mothers’ anxious personality tendencies contributed both to the induction and to the maintenance of her symptomatology.

**Treatment plan**

- **List of problems:** (1) Maria’s plane flight phobia; (2) Irritability and low frustration tolerance; (3) Sleep onset insomnia
- **Treatment objectives:** (1) Eliminating the plane flight phobia, including the erroneous thoughts about air travel; (2) Increasing frustration tolerance; (3) Normalizing sleep
- **Therapeutic intervention plan:** In the initial phases of the psychological treatment, we aimed to eliminate flight phobia and correcting the erroneous thoughts concerning the dangers of traveling by plane.

In order to reduce the symptoms of flight phobia, we started by applying desensitization techniques. First, we started with imaginary exposure, over several hypnosis sessions, combined with self-hypnosis sessions. We further exposed her to a VR environment, using a specially designed soft exclusively created for the treatment of flight phobia. In our last session, we used hypnosis for the consolidations of the therapeutic results. To eliminate catastrophic thoughts related to the possibility of developing health problems as a result of air travel, we used Ellis' ABC model (1994), applied in several session of Rational Emotive Behavioral Therapy. We applied the same approach to increase frustration tolerance.

To improve sleep quality, we used breath control exercises, hypnosis and self-hypnosis. The therapy consisted in 6 sessions, five of them used for delivering cognitive-behavioral hypnotherapy and one session for implementing exposure to flight in the VR environment.

**First session**

In the first session, we discussed with „Maria” about the problems that determined her to consider therapy, such as: aerophobia, irritability, low frustration tolerance and sleep onset insomnia. For HADS (Zigmond & Snait, 1983) we found a score of 14 for anxiety and 5 for depression. To appreciate her flight fear, we applied a scale ranging from 0 (lack of fear) to 10 (excessive fear). She rated her fear at an intensity of 10.

We explained to „Maria” the correlation between fear – emotional negative tensions and hyperventilation together with the other symptoms that bothered her when she was imagining the plane flight (tingling, trembling, palpitations, headache, and irritability). Once activated, thea fear prompted these symptoms, which in turn, accentuated the fear, creating a vicious cycle. Then the client was encouraged to hyperventilate for 2 minutes and to share with us the sensations that she felt, which, in great measure, overlapped with those occurring when she was imagining the plane flight. Further, she was taught to breathe in 3 steps, each 4 seconds long: forced inhalation, maintaining the air using the Valsalva maneuver and forced exhalation. She was taught that by practicing these exercises she would be able to control the unpleasant sensations promptly. Until the next session, her homework was to exercise three times per day the breath control exercise learnt during this therapy session.

**Second session**

We explained to the patient the ABC model of Albert Ellis (1994), the founder of Rational - Emotive Behavioral Therapy, insisting on the importance of catastrophic cognitions in generating phobias in general and flight phobia in particular.
We asked the patient to do a ranking of the most terrible things that could happen to her, on a scale of 0 to 10 (10 being the most terrible thing possible). He considered the following:

- The death of her child, parents or husband – 10
- The illness of her child, parents or husband – 8
- Her own sickness state – 7
- Flight phobia – 6

We relativized the catastrophic idea of a plane flight, showing her that this possibility is not such a terrible thing, but rather a worrying thing and that a plane flight is the safest type of transport invented so far in the whole humankind, statistically speaking.

The meeting ended in a hypnosis session. The induction was made through three three-step breaths, followed by progressive muscular relaxation and then by the blackboard method (Goldberg, 2000), applied initially as a method of deepening the trance („Write on an imaginary blackboard, successively, the letters from A to Z, and while you wipe it with the sponge, you are more and more relaxed”) and then as a method of therapeutic intervention and problem solving, including strengthening the self („Please write on the blackboard the following words, each one under the other: disease, fear of flight, nervousness, low frustration tolerance, insomnia, getting sick, which you will then erase with the sponge and relax. Now please write the words: health, courage, self-control, tolerance, peaceful sleep and under those: I will succeed, I will succeed, I will succeed...”).

After returning from the trance, we discussed with the patient about the sensations that she felt during hypnosis, which she admitted that were very pleasant. As homework, we prescribed her to apply the blackboard exercise before bedtime, preceded by a three-step breathing exercise, arguing that that these techniques will facilitate her sleep.

Third session

At the beginning of the session, „Maria” reported the fact that she slept very well, feeling really rested after practicing the blackboard exercise, without needing hypnotic medication. Then we started creating a list of situations concerning a real or imaginary plane flight, evaluating the level of distress associated with them on a 0 to 10 scale (10 representing the maximum level of distress). She reported in a decreasing order the following scores:

- 10 for boarding a plane
- 8 for the sight of a plane right in front of her
- 6 for the sight of a plane ticket
- 4 for the appearance of plane on the TV screen
- 2 for a hint related to air travel

We continued the imaginary exposure, as follows: we started with the three-steps breathing exercise; we induced the hypnotic trance through Jacobson’s progressive muscular relaxation, followed by a deepening of the trance by counting
from 0 to 20, giving suggestions of profound relaxation, followed by successively imagining the stressful situations listed from 2 to 6. Whenever she experienced restlessness during the imaginary exposure, we gave her the suggestions of calm and relaxation, and we continued with the exposure procedures. After coming out of trance, „Maria” reported a decrease in fear intensity for the situations listed above (for example – 6 the sight of a plane ticket decreased to 4, etc.). Her homework assignment was to continue with the blackboard exercise and with the three-step breathing exercise.

**Forth session**

We explained to “Maria” that she would continue the imaginary exposure with the help of the VR. We proceeded to a hypnosis session in which we administered positive suggestions regarding healing and raising self-esteem. In addition, we gave her the suggestion that she will be able to tolerate the contact with the plane. We will further present a fragment from the hypnosis session where she was given the following suggestions: “You are calm and relaxed... You see a big plane in front of you... You continue to feel relaxed... Imagine with all your strength that you lean your hands forwards...and while you are doing that the plane in front of you becomes smaller... smaller... smaller... until it is as small as a toy, and you can make it your friend... You are calm and relaxed.”

After coming out of the trance, „Maria” reported that she decided to view the plane as her friend, and she perceived it as inoffensive. As homework, she had to exercise self-hypnosis with the blackboard method, followed by an imagery exposure technique similar to the one practiced during the hypnosis session.

**Fifth session**

In this session, “Maria” was the subject of a two successive exposure procedures to a plane flight through the VR software owned by AVALON Research Center from the Faculty of Psychology and Educational Science within the pale of the International Institute of Advance Studies of Psychotherapy and Applied Mental Health of Babes-Bolyai University.

The Institute owns a Robotic Psychotherapy and Virtual Reality platform named PsyTech-Matrix Platform. During the session, a very important fact was noticed, namely that the client was able to calm herself while she was staring through the plane window in the virtual environment.

**Sixt Session**

At the beginning of the session, „Maria” reported the fact that she managed to do very well the self-hypnosis and the imaginary exposure exercises, feeling very low levels of distress. She received a positive reinforcement from her therapist, after which she was asked to look out the plane’s window during the flight to Canada. A new hypnosis session was done, in which the hypnotic induction was achieved with the help of special relaxation music. On this musical
background, positive suggestions were offered in order to maintain the favorable results of therapy. We recommended the client to and to continue the self-hypnosis exercises.

We administered her again the HADS and she obtained the following scores: 3 for anxiety and a 2 for depression. These scores certified the improvement of her psychological state. After this last session, we recommended her to continue at home with the self-hypnosis exercises and „Maria” was now able to successfully air travel, and her flight phobia symptoms were remitted.

Evolution

After all the six therapy sessions, the problems that were present at the beginning of the therapy disappeared. She managed to control her anxiety concerning the plane flight and she succeed to arrive in Canada. She confessed that during the flight she constantly look through the plane’s window, admiring the sight of Greenland. These benefic results were maintained in time, even when she returned home.

Conclusions

The presented case illustrates how combining hypnotherapy, self-hypnotic techniques with Rational-Emotive and Behavioural Therapy and desensitization procedures in the form of imaginary exposure and exposure to virtual reality environments specially designed for flight simulations, is effective in treating symptoms of flight phobia.

Bibliography


THE EFFECT OF AN INTEGRATIVE CBT/REBT INTERVENTION IN IMPROVING EMOTIONAL FUNCTIONING AND EMOTIONAL STABILITY IN ROMANIAN MEDICAL STUDENTS

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Abstract
The current study investigated the effects of an integrative CBT/REBT intervention on anxiety symptoms, negative emotions, irrational beliefs (IBs) and emotional stability in a sample of anxious medical students. In addition, we examined the role of IBs as a predictor of changes in anxiety symptoms, negative emotions, and emotional stability during the CBT/REBT intervention. A number of 60 medical students with moderate and high anxiety were included in the current study. Anxiety symptoms, negative emotions, IBs, and emotional stability were assessed pre- and post-intervention. Results revealed significant decreases in anxiety symptoms, negative emotions, and IBs after the intervention, as well as a significant increase in emotional stability. Also, when changes in specific IBs were simultaneously examined in relation to changes in anxiety symptoms, negative emotions, and emotional stability, the changes in Low Frustration Tolerance (LFT) were the only significant predictor of changes in emotional stability. Otherwise, only overall changes in IBs were significant predictors of changes in anxiety and negative emotions. Thus, current results indicate that CBT/REBT can be successfully applied to anxious medical students demonstrating beneficial effects on emotional and personality functioning by targeting IBs in general, and LFT in particular.

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Keywords: CBT, anxiety symptoms, negative emotions, emotional stability, irrational beliefs

Introduction

Over the course of a year, one of three students (1/3) in the first year of study presents various psychological or emotional problems such as anxiety, depression, and alcohol consumption, which further contributes to poor performance in the educational process and even to educational dropout (Bruffaerts et al., 2018; Chapell et al., 2005; Sohail, 2013). Moreover, due to the high degree of difficulty of medical curricula and exams, there is a much greater level of distress, anxiety and depression for medical students compared to the general student population (Erschens et al., 2016). At the same time, during practical stages medical students are also anxious not to commit medical errors which may have serious consequences for the patients (Nevalainen, Mantyranta, & Pitkala, 2010). In addition, another concern for medical students is related to the fear of not being appreciated by the hospital staff and/or by the clinical coordinator (AlFaris et al., 2016). Thus, at the confluence of these pressures experiencing anxiety symptoms and an increased level of negative affect in medical students is not uncommon, but more the rule (Kremer, Mamede, Roriz Filho, & Madeiro Leite, 2016).

In this regard, one of the psychological mechanisms that were proposed to underlie the poor emotional functioning in individuals navigating diverse stressful situations (including medical students) is the endorsement of a dysfunctional/irrational thinking style (David, Lynn, & Ellis, 2010; Oltean, Hyland, Vallières, & David, 2017). According to classic cognitive behavioral therapies (CBTs), and especially to rational-emotive behavior therapy (REBT) (David, Schnur, & Belloiu, 2002; Ellis, 1995) when encountering stressful situations (e.g., having a difficult exam) individuals can endorse irrational beliefs about these activating events (e.g., I must do well or I am no good) which further contributes to the experience of intense dysfunctional negative emotions (e.g., anxiety, depression) and behaviors (e.g., poor exam performance). The REBT theory suggests that these irrational beliefs are divided into four main categories: (a) demandingness (DEM; e.g., “I must not fail the exam”), (b) awfulizing/catastrophizing (AWF; e.g., “It is tragic if I fail the exam”), (c) low frustration tolerance (LFT; e.g., “I can’t stand failing the exam”), and (d) global evaluation/self-downing (SD; e.g., “If I fail the exam, I am no good”). In REBT, these four types of irrational beliefs are considered central factors in generating emotional distress and psychopathology in individuals (David & Szentagotai, 2006). Indeed, numerous studies support the association between irrational beliefs and distress in different samples (i.e., undergraduate students, non-clinical, clinical) using diverse types of designs (i.e., from cross-sectional to longitudinal, and experimental) (David et al., 2010). Also, a recent meta-analysis further confirmed the relationship between irrational beliefs and distress, such as general distress, anxiety, depression, anger, and guilt (Vislà, Flückiger, Holtforth, & David, 2016). In other words, endorsing irrational beliefs in the face of stress in the form of DEM, AWF, LFT, and SD is detrimental for further emotional
functioning in individuals by generating negative dysfunctional feelings (e.g., anxiety and depression) and behaviors. Thus, it follows from CBT/REBT theory that reductions (changes) in these irrational beliefs should be associated with improvements (changes) in emotional functioning. Studies have also supported this hypothesis in diverse samples pointing out the beneficial effects of CBT in general, and REBT in particular (CBT/REBT) in reducing these IBs (David, Cardoș, & Matu, 2019; Neamțu & David, 2016; Szentagotai, David, Lupu, & Cosman, 2008). Moreover, a recent meta-analysis suggested not only that CBT/REBT interventions are effective in reducing IBs over the course of intervention, but also that these changes in IBs correspond to changes in diverse psychological outcomes (i.e., emotional, behavioral) (David, Cotet, Matu, Mogoase, & Stefan, 2018). In other words, studies to date suggest that improvements in emotional functioning during CBT/REBT could be largely attributed to changes in these specific irrational beliefs (DEM, AWF, LFT, and SD).

However, despite the recognition of CBT/REBT as effective for improving emotional functioning in individuals (David, Predatu, & Cardoș, 2018), few studies investigated the effects of this intervention on more stable characteristics, such as personality traits (Roberts et al., 2017). Recently, research suggested that psychological interventions (including CBT) were associated with significant changes in personality traits measures and that emotional stability was the main personality trait that showed changes following therapeutic interventions (Roberts et al., 2017; Zinbarg, Uliaszek, & Adler, 2008). However, as these recent studies suggested, a key necessity for future research is to identify specific mechanisms that are responsible for changes in personality during the therapeutic intervention. In this regard, one could propose that changes in irrational beliefs during a CBT/REBT intervention (which is considered intrinsic to CBT/REBT approach) might be a potential mechanism that can contribute to changes in personality traits, such as emotional stability. Previous correlational data indicate that as the level of IBs decreases, the level of emotional stability increases, thus it may be the case that reducing IBs during a CBT/REBT intervention might be effective in increasing emotional stability in individuals (Sava, 2009). However, to our knowledge no study to date directly tested this specific hypothesis. Moreover, it might also be important to explore which specific IBs (DEM, AWF, LFT, and SD) are more relevant to improvements in emotional stability during CBT/REBT. Such an endeavor could inform and guide psychological interventions and prevention efforts to target specific IBs that may be at play for personality and emotional functioning in individuals encountering stressful situations.

Overview of the Current Study

Given this background, the goal of the current study was to further examine the beneficial effects of an integrative CBT/REBT intervention on reducing anxiety symptoms, negative emotions and IBs in a sample of medical
students with moderate and high anxiety symptoms. In addition, we examined the effects of this CBT/REBT intervention on more stable characteristics/personality traits of medical students, such as emotional stability. In line with recent research, we hypothesized that CBT/REBT will be effective in increasing emotional stability from pre to post-intervention. Finally, we examined how CBT/REBT leads to benefits in emotional functioning and emotional stability in anxious medical students. Specifically, we proposed that reductions (changes) in IBs over the course of the intervention will also predict reductions (changes) in anxiety symptoms and negative emotions, as well as increases (changes) in emotional stability. In addition, for exploratory purposes we investigated if these improvements in emotional functioning and emotional stability can be largely attributed to reductions in specific IBs (DEM, AWF, GE, LFT). No explicit hypothesis was formulated regarding this analysis.

**Methods**

**Participants**

The current sample consisted of sixty undergraduate medical students (39 females and 21 males) with clinically significant anxiety, selected from a larger sample of 473 medical students. Participants were included in the current study if they had a score of 15 or higher on the Hamilton Anxiety Rating Scale (HAM-A), which is considered a cut-off point for moderate clinical anxiety (Matza, Morlock, Sexton, Malley, & Feltner, 2010). Their ages ranged between 18 and 32 years ($M=20.40$, $SD=2.15$).

**The integrative CBT/REBT intervention and therapists**

The therapeutic protocol was based on an integrative and multimodal CBT/REBT perspective (David & Cristea, 2018; David, Matu, Podina, & Predatu, 2019) focused mainly on targeting various types of cognitions (e.g., automatic thoughts, irrational beliefs) using different clinical strategies: (a) cognitive restructuring techniques (using cognitive and/or behavioral strategies, such as empirical disputation and in-vitro/in-vivo exposure), (b) coping skills (e.g., relaxations techniques and mindfulness), and (c) social skills (assertiveness training).

Therefore, the first session was dedicated exclusively to psychological assessment. Specifically, in this session participants were administered with the clinician-rated HAM-A and were asked to complete the self-report scales. Sessions 2 and 3 consisted in psychoeducation, in which students were socialized with the treatment rationale and the CBT/REBT principles. At this phase, the most important aspect was to explain them how their irrational beliefs/automatic thoughts influence their emotions, behavior and physiological reactions. In session 4 we further highlighted the important role of irrational beliefs/automatic thoughts
as a mechanism leading to dysfunctional emotions and behaviors, and we initiated the process of cognitive restructuring. Session 5 was reserved for cognitive restructuring, specifically debating irrational beliefs/automatic thoughts, and help students acquire alternative rational/healthy beliefs. In session 6 exposure techniques were applied, using guided imagery with a catastrophic scenario, followed by cognitive restructuring. Sessions 7 and 8 involved the training of socio-emotional skills in students using role-play, relaxations techniques and mindfulness. Maintaining the progress, consolidation of learning and relapse prevention were delivered in session 9. Finally, a post intervention assessment was delivered where the clinician-rated HAM-A and self-report measures were administered again. The action plan covered in-vivo exposures (during exams/evaluations), small-talks, oral presentations in front of the class and self-monitoring. Each session lasted for 50 minutes, with a frequency of one per week, totaling a number of 10 sessions delivered over 10 weeks. Five therapists and licensed clinical psychologists trained in cognitive-behavior therapy were involved in this study. The average experience of the therapists is 8.45 years of therapeutic experience.

Measures

Profile of Affective Distress (PAD) (Opris & Macavei, 2007) is a 39-item self-report scale that measures positive and negative affect. In the current study we used the negative affect subscale to measure negative emotions in medical students. This subscale includes 29 adjectives describing negative emotions related to dimensions of concern/anxiety and sadness/depression. Participants were asked to rate on a 5-point Likert scale (0=not at all, 4=extremely) the extent to which they experienced each emotion specified by the item. Higher scores represent increased levels of negative emotions. The internal consistency of the scale has received support in previous studies with alpha Cronbach’s between 0.80 and 0.94 (e.g., Gaviţa, David, Bujoreanu, Tiba, & Ionuţiu, 2012).

Hamilton Rating Scale for Anxiety (HAM-A) (Hamilton, 1959) is a 14-item clinician-rated measure that measures anxiety symptoms. In the current study, clinicians rated on a 5-point Likert scale (0=absent, 4=very severe) the extent to which medical students reported anxiety symptoms at the time of evaluation. Higher scores represent increased levels of anxiety symptoms. A cut-off score of 15 was recommended as optimal by past research for identifying individuals with moderate anxiety (Matza et al., 2010). In the current study, HAM-A was used both as a screening measure to obtain a sample with moderate anxiety symptoms, as well as to assess the severity of their symptoms. Previous studies showed that the scale has good internal psychometric properties (Matza et al., 2010).

The Attitudes and Beliefs Scale-Second Edition (ABS-II) (DiGiuseppe, Leaf, Exner, & Robin, 1988) is a 72-item self-report scale that measures rational...
and IBs consistent with REBT theory. In the current study we used the IBs subscale to measure IBs in medical students. This subscale includes four IBs (demandingness - DEM, global evaluation - GE, low frustration tolerance – LFT, awfulizing - AWF). Participants were asked to rate on a 5-point Likert scale (0= strongly disagree, 4= strongly agree) the extent to which they agree with each irrational belief specified by the item (e.g., “I would be a worthless person if I failed at important tasks”). Higher scores represent increased levels of IBs. The ABS has received support in previous studies as a reliable and valid measure with alpha Cronbach’s between 0.83 and 0.97 (e.g., Gaviţa et al., 2012).

The DECAS Personality Inventory (Sava, 2008) is a 95-item self-report scale that measures personality in five broad domains: openness, extraversion, conscientiousness, agreeableness and emotional stability (as opposed to neuroticism). In the current study we used the emotional stability subscale to measure emotional stability in medical students. Participants were asked to rate on a dichotomous scale (0=False, 1=True) the extent to which each item related to emotional stability applies to them. Higher scores represent an increased level of emotional stability. The reliability of DECAS was confirmed in previous studies with alpha Cronbach’s between 0.70 and 0.75 (Sava, 2009).

Data analysis

Means and standard deviations were calculated for each study variable. To assess whether CBT intervention was effective for improving emotional functioning and stability in anxious medical students, a repeated measures MANOVA was used to analyze the changes in anxiety, negative emotions, IBs and emotional stability from pre- to post-intervention. Significant effects were explored using Sidak adjusted pairwise comparisons. As an index of effect size for the main significant effects we computed $\eta_p^2$, while Cohen’s $d$ was selected for significant pairwise comparisons. Also, Cohen’s $d$ was interpreted conservatively, with .2, .5, .8, representing small, moderate, and large effects sizes (Cohen, 1992). Further, a series of hierarchical multiple regression analyses were conducted to determine whether changes in specific IBs during CBT intervention predicted changes in anxiety, negative emotions, and emotional stability. All four IBs (DEM, AWF, GE, LFT) were included as concurrent predictors in each model.

Results

Means and standard deviations for all study variables are summarized in Table 1.
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Table 1. Descriptive statistics for the main outcomes

<table>
<thead>
<tr>
<th>Variables</th>
<th>Pre-intervention</th>
<th>Post-intervention</th>
<th>F-value</th>
<th>Effect size</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAM-A</td>
<td>M = 25.00</td>
<td>M = 7.60</td>
<td>F = 876.77</td>
<td>d = 3.82</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>(SD=5.03)</td>
<td>(SD = 3.43)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PDA-N</td>
<td>M = 58.25</td>
<td>M = 47.30</td>
<td>F = 16.86</td>
<td>d = 0.53</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>(SD=18.85)</td>
<td>(SD = 14.69)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DECAS-SE</td>
<td>M = 45.28</td>
<td>M = 51.01</td>
<td>F = 32.57</td>
<td>d = 0.47</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>(SD = 9.03)</td>
<td>(SD = 9.03)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABS irrational beliefs</td>
<td>M = 61.46</td>
<td>M = 40.91</td>
<td>F = 57.66</td>
<td>d = 0.98</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>(SD = 26.21)</td>
<td>(SD =24.83)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: HAM-A = Hamilton Rating Scale for Anxiety; PDA-N = Profile of Affective Distress – Negative Emotions; SE-DECAS = DECAS Personality Inventory – Emotional Stability; ABS = Attitudes and Beliefs Scale; M = mean, SD = standard deviation, d = Cohen’s d effect size.

Effects of CBT/REBT treatment on anxiety, negative emotions, emotional stability, and IBs

A repeated measures MANOVA was conducted to examine if the CBT was beneficial for emotional functioning in anxious medical students. Results showed a significant effect of time (pre-intervention vs. post-intervention) on anxiety ($F[1, 59] = 876.77, p < .001, \eta^2=.93$), negative emotions ($F[1, 59] = 16.86, p < .001, \eta^2=.22$), emotional stability ($F[1, 59] = 32.57, p < .001, \eta^2=.35$), and irrational beliefs ($F[1, 59] = 57.66, p < .001, \eta^2=.49$). Pairwise comparisons within subjects with Sidak correction revealed that anxiety [mean difference = 17.40, SE = .58, p < .001], negative emotions [mean difference = 10.95, SE = 2.66, p < .001], and IBs [mean difference = 20.55, SE = 2.70, p < .001] significantly decreased from pre- to post-intervention. Conversely, emotional stability significantly increased from pre- to post-intervention [mean difference = -5.73, SE = 1.00, p < .001]. Also, we found large effect sizes on anxiety symptoms ($d = 3.82$) and irrational beliefs ($d = 0.98$). Moderate for negative emotions ($d = 0.53$), while small to moderate for emotional stability ($d = 0.47$).

Changes in IBs in relation to changes in anxiety, negative emotions and emotional stability

In the next step, we used a series of hierarchical multiple regression analyses to examine the contribution of changes in specific IBs in predicting changes in anxiety, negative emotions, and emotional stability during CBT intervention. Three separate regression analysis were conducted for each outcome variable (anxiety symptoms, negative emotions, and emotional stability).
In the first regression, changes in specific IBs were entered as predictors of changes in anxiety symptoms. The model was significant, \( F (4, 55) = 3.86, p < .05 \), and explained 21.9% of the variance in changes in anxiety symptoms during CBT intervention. Even though the overall model was significant, as can be seen from Table 2, no specific irrational belief emerged as a significant predictor (ps > .05). In the second regression, changes in specific IBs were entered as predictors of changes in negative emotions. This model was also significant, \( F (4, 55) = 3.17, p < .05 \), and accounted for 18.7% of the variance in changes in negative emotions. Again, even though the overall model was significant, no specific irrational belief emerged as a significant predictor (ps > .05) in the model. Finally, in the third regression, changes in specific IBs were entered as predictors of changes in emotional stability. The model was significant, \( F (4, 55) = 4.52, p < .05 \), and explained 24.8% of the variance in changes in emotional stability during CBT intervention. Of the four IBs, changes in LFT was the only significant predictor in the model (\( \beta = -.43, p < .05 \)).

**Table 2.** Hierarchical multiple regression analyses for changes in irrational beliefs in predicting changes in anxiety symptoms, negative emotions, and emotional stability during CBT/REBT intervention.

<table>
<thead>
<tr>
<th>Variable</th>
<th>( B )</th>
<th>SE( B )</th>
<th>( \beta )</th>
<th>( R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anxiety Symptoms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Model</td>
<td>( .219^* )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEM</td>
<td>-.14</td>
<td>.08</td>
<td>-.30</td>
<td></td>
</tr>
<tr>
<td>AWF</td>
<td>.08</td>
<td>.07</td>
<td>.22</td>
<td></td>
</tr>
<tr>
<td>GE</td>
<td>.08</td>
<td>.06</td>
<td>.21</td>
<td></td>
</tr>
<tr>
<td>LFT</td>
<td>.13</td>
<td>.08</td>
<td>.30</td>
<td></td>
</tr>
<tr>
<td><strong>Negative Emotions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Model</td>
<td>( .187^* )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEM</td>
<td>.55</td>
<td>.39</td>
<td>.26</td>
<td></td>
</tr>
<tr>
<td>AWF</td>
<td>-.02</td>
<td>.34</td>
<td>-.01</td>
<td></td>
</tr>
<tr>
<td>GE</td>
<td>.24</td>
<td>.31</td>
<td>.13</td>
<td></td>
</tr>
<tr>
<td>LFT</td>
<td>.21</td>
<td>.39</td>
<td>.12</td>
<td></td>
</tr>
<tr>
<td><strong>Emotional Stability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Model</td>
<td>( .248^* )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEM</td>
<td>-.04</td>
<td>.14</td>
<td>-.06</td>
<td></td>
</tr>
<tr>
<td>AWF</td>
<td>-.01</td>
<td>.12</td>
<td>-.01</td>
<td></td>
</tr>
<tr>
<td>GE</td>
<td>-.01</td>
<td>.11</td>
<td>-.02</td>
<td></td>
</tr>
<tr>
<td>LFT</td>
<td>-.32</td>
<td>.14</td>
<td>-.43*</td>
<td></td>
</tr>
</tbody>
</table>

*Note: DEM = Demandingness; AWF = Awfulizing; GE = Global Evaluation; LFT = Low Frustration Tolerance; \( ^*p < .05 \).
Discussion

Past research highlighted that CBT/REBT is effective for improving emotional functioning in individuals encountering stressful situations (David et al., 2018; Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012). In addition, research suggested that these improvements in emotional functioning during CBT/REBT could be largely attributed to changes in specific IBs (Szentagotai et al., 2008). However, despite the recognition of CBT/REBT as effective for improving emotional functioning, few studies investigated the effects of this intervention on more stable characteristics of individuals, such as personality traits and in particular on emotional stability (Roberts et al., 2017). In addition, to our knowledge, no study to date explored if changes in IBs act as a predictor of changes in emotional stability during a CBT/REBT intervention. Finally, few studies have been conducted on medical students, a population at risk to develop anxiety and to show a poor emotional functioning and emotional stability (Bugaj et al., 2016).

In this context, the goal of the current study was to further examine the beneficial effects of an integrative CBT/REBT intervention on reducing anxiety symptoms, negative emotions and IBs in a sample of anxious medical students, as well as on increasing their emotional stability. In addition, we examined if changes in IBs over the course of the intervention will predict the changes in emotional functioning (as suggested by past research) and emotional stability in medical students.

As expected, current results showed that CBT/REBT was effective in decreasing anxiety symptoms (\(d = 3.82\); very large effect size), negative emotions (\(d = 0.53\); moderate effect size), and IBs (\(d = 0.98\); large effect size) from pre- to post-intervention, as well as in increasing emotional stability (\(d = 0.47\); small to moderate effect size) in medical students. Further, current results showed that changes in overall IBs during this integrative CBT/REBT predicted changes in anxiety symptoms, negative emotions, and emotional stability. In addition, our results showed that specific IBs were particularly important in relation to changes in emotional stability. More specifically, our results showed that changes in LFT specifically predicted changes in emotional stability. In other words, decreases in medical students’ frustration intolerance during the interventions was related to more emotional stability in this sample.

Therefore, current results further support previous studies showing that CBT/REBT is effective in improving emotional functioning in individuals with clinically significant anxiety (David et al., 2018; Hofmann et al., 2012). Also, our results support previous research showing that psychological interventions (including CBT) is effective in modulating more stable characteristics of individuals (personality traits), such as emotional stability (Roberts, 2018). In addition, our study extends previous research showing that a specific predictor of changes in this particular trait is LFT. Thus, at a more general level, current
findings point towards the importance of identifying and addressing IBs in medical students with further beneficial effects on emotional functioning and emotional stability. At a more specific level, our results suggest that particularly improving medical students’ frustration tolerance during a CBT/REBT intervention should contribute to more emotional stability. Thus, investigating specific factors, as IBs in relation to changes in personality traits, such as emotional stability is especially important for informing and guiding therapeutic interventions to target specific psychological factors that may be at play in relation to emotional and personality functioning, and subsequently improve students’ functioning in the face of stress.

The study has also some important limitations. First, even though our sample had clinically significant anxiety (based on a cut-off), it was a convenience sample of undergraduate student and no formal diagnosis was conducted in the current study. Future studies should replicate these results in more heterogeneous samples of older ages with a formal diagnosis of anxiety. Second, the pre-post design limits our ability to generalize the findings and to fully examine the efficacy of this intervention, as well as the predictors of changes in emotional functioning and emotional stability. In this regard, a randomized clinical trial (with mid-treatment assessments included) is needed to comprehensively assess the efficacy of this intervention, as well as the mechanisms of change. Finally, another limitation is the reliance exclusively on self-report measures of emotional functioning and emotional stability. To determine that CBT/REBT results in a significant improvement (i.e., variables are actually changing) on personality and emotional functioning, future research designs where friends and/or interviewers report on the emotional functioning and stability of individuals are needed.

In conclusion, current results indicate that CBT can be successfully applied to medical students with clinically significant anxiety, demonstrating beneficial effects on reducing anxiety symptoms, negative emotions, and IBs, as well as in increasing emotional stability. In addition, the current study highlights the role of LFT in relation to emotional stability and demonstrates that increases in emotional stability during CBT/REBT can be largely attributed to reductions in LFT. Thus, clinical interventions may focus on targeting this LFT in anxious medical students with further beneficial effects on emotional stability.

References


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Abstract
The Acceptance and Action Questionnaire-II (AAQ-II) was developed as a self-report instrument meant to measure experiential avoidance (EA), the central construct of Acceptance and Commitment Therapy. Although it is generally accepted that there are no systematic gender differences on AAQ-II scores, some studies revealed higher scores of EA in women. The seemingly contradictory results leave open the question of whether the observed differences should be regarded as a genuine construct level difference between the two populations, or rather as a methodological artifact due to measurement non-invariance of AAQ-II. Our study aims to address the measurement invariance across gender groups of the Hungarian version of the AAQ-II. N=342 participants (37.75% male, and 62.25% female) completed the 7-item AAQ-II. Measurement invariance was assessed through multi-group CFA, using IBM AMOS ML estimation. Differences between the nested models were assessed through Δχ² complemented by changes of CFI (ΔCFI). Our results sustained the unidimensional structure of AAQ-II, and its construct validity. Partial measurement invariance of the AAQ-II and statistically significant latent mean differences across gender was also found, women showing higher

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levels of EA. These results were discussed from the perspective of cultural differences in the socialization of emotions.

**Keywords:** acceptance and commitment therapy, psychological flexibility, measurement invariance, latent mean differences, confirmatory factor analysis

**Introduction**

The constructs of psychological flexibility/psychological inflexibility, the central theoretical concepts of Acceptance and Commitment Therapy (ACT; Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Hayes, Strosahl, & Wilson, 2012; Hayes, Strosahl, Bunting, Twohig, & Wilson, 2004) have received considerable attention within clinical psychology during the last decade.

The model of psychological flexibility involves six core processes (cognitive diffusion, acceptance, contact with the present moment, self as context, values and committed action), acceptance and its opposite, experiential avoidance (EA) offer theoretical support for explaining psychopathology and psychological health, and the necessary theoretical foundation for psychological intervention meant to improve mental health and quality of life (Hayes et al., 2006, Hayes, Barnes-Holmes & Roche, 2001).

According to Hayes et al. (1996), EA is “the phenomenon that occurs when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioral predispositions) and takes steps to alter the form or frequency of these events and the contexts that occasion them” (Hayes et al., 1996, pp. 1154). Given its rigidity, EA appears even when such behavior is unneeded and valueless, or even when it interferes with the ongoing valued actions (Monestès et al., 2016; Schmalz & Murrell, 2010; Hoyer & Gloster, 2013). Acceptance, as opposed to EA is the ability to behave in accordance with the given context and individual values despite experiencing painful emotions, thoughts and sensations (Karekla & Michaelidis, 2017).

The Acceptance and Action Questionnaire-II (AAQ-II) was developed as a self-report instrument meant to measure indirectly psychological flexibility/inflexibility by measuring one key-process that defines it, namely EA (c.f., Hayes et al., 2006).

The 10-item version of the AAQ-II was developed in order to overcome shortcomings concerning the original version of AAQ (weak internal consistency, lack of research regarding the factor structure of the scale and its construct validity (especially discriminant validity) (Wolgast, 2014). Although studies revealed good psychometric properties for the 10-item AAQ-II (Bond et al., 2011; Fledderus, Oude Voshaar, Klooster & Bohlmeijer, 2012), in some studies, three of its items tended to regroup on a second (probably method) factor (Monestès, Villatte, Mouras, Loas, & Bond, 2009; Szabó, Vargha, Balázsi, Bartalus & Bogdan, 2011).
Given that these items were the only positively worded ones, and that the apparent “secondary” factor had no meaning in terms of measuring another construct, taking into account the content of the items and the inter-correlations between the two factors, most researchers have attempted to explain this phenomenon as a methodological artifact (Bond et al., 2011; Szabó et al., 2011). However, considering these methodological complications and the fact that the three positively worded items showed poorer psychometric functioning (item total correlation, factor loading) as compared to the negatively worded ones, the three positively worded items were eliminated from the original version (Bond et al., 2011), and other versions as well (e.g., Portuguese: Pinto-Gouveia, Gregório, Dinis & Xavier, 2012; Italian: Pennato, Berrocal, Bernini & Rivas, 2013). The final version of the AAQ-II is a 7-item instrument, a unidimensional measure of EA, showing superior psychometric properties compared to both the 10-item version and the original AAQ-I. Internal consistency for this measure was found to be good, with Cronbach’s alpha coefficients ranging from .78 to .88 across different samples and test-retest reliability between .81 and .79 (retested after 3 and 12 month) (Bond et al., 2011).

Regarding its construct validity, AAQ-II showed good concurrent validity, predicting various scores on scales measuring psychopathology, such as the Beck Depression Inventory (range between .69-.71) (Beck, Steer & Brown, 1996) and the Beck Anxiety Inventory, \( r = .65 \) (Beck & Steer, 1993) and different measures of mindfulness (Moore, Brody and Dierberger, 2009, Thompson & Waltz, 2010). Additionally, AAQ-II shows high correlation with the AAQ-I \( (r = .97) \) (Bond et al., 2011). EA as a core process measured by AAQ-II was found to be correlated with anxiety-related symptoms (Kashdan, Barrios, Forsyth & Steger, 2006), general anxiety disorder (Roemer, Salters, Raffa & Orsillo, 2005) and relapse in substance abuse (Stewart, Zvolensky & Eifert, 2002), and it was found to be an important factor in explaining psychological health (Kashdan and Rottenberg, 2010).

Regarding its convergent validity, correlations between AAQ-II scores and measures of similar constructs, like Bear Supression Inventory (correlations across the three samples ranging between .57-.60) were found (Wegner & Zanakos, 1994).

Despite the exciting proofs regarding its validity, there are some studies that question the discriminant and conceptual validity of AAQ. In this line, Gamez, Chmielewski, Kotov, Ruggero & Watson (2011) found that the scale does not discriminate between EA, neuroticism and affectivity. Another study conducted by Chawla & Ostafin (2007) found that AAQ does not make sufficient distinction between process and outcome. They found that there are many items in AAQ for which it is difficult to distinguish between EA as an attitude towards private events or a supposed outcome of EA in terms of emotional problems (Wolgast, 2014).

During the construction of AAQ-II the authors addressed these problems. Approaching factorial structure of AAQ-II, the results of a confirmatory factor analysis on an item pool including both the Beck Depression Inventory (BDI-II) and AAQ-II items, show that the best model fit was obtained for a two-factor
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model, for which items of AAQ-II and BDI-II loaded on separate factors (Bond et al., 2011). Even if these results seem to be a strong argument for the discriminant validity of AAQ-II, there are two studies (Games et al., 2011, Gamez et al., 2014) showing higher association of AAQ-II with neuroticism (compared with the Multidimensional Experiential Avoidance Questionnaire), suggesting that the issues of discriminant validity were not entirely resolved. It remains unclear how well the AAQ-II scale discriminates between process and outcome.

Another important issue regarding psychometric qualities of any psychological instrument is that of measurement invariance. American Educational Research Association, American Psychological Association & National Council on Measurement in Education (1999) recommendations advocate the necessity of determining the invariance of psychological assessment instruments before using them to study the presumed differences between samples obtained from different target populations. As noted by Fledderus et al. (2012), age and gender “might confound the outcomes of effectiveness studies if the items of the instrument used are biased against subgroups, especially in smaller trials” (p. 929). According to Worthington & Whittaker (2006), testing for measurement invariance across distinct groups (e.g., male-female) is a procedure that may contribute to a better understanding of an instrument’s construct validity.

To our knowledge, only a few studies have systematically investigated the issue of factorial invariance of the AAQ-II (except Bond et al., 2011 and Fledderus et al., 2012). In the preliminary study of psychometric properties of the original AAQ-II, Bond et al. (2011) investigated the factorial invariance across six samples (a total of 2816 participants), the obtained results supporting the unidimensional factor structure. No gender differences between mean scores were reported, except for an undergraduate student sample (206 participants, Study 1). On this sample a correlation of $r = -.2$ between negatively worded items and gender has been found, indicating higher level of EA for women (Bond et al., 2011).

Analyzing gender differences within adaptation studies involving AAQ-II scores, there is only one reporting no statistically significant results (Portuguese adaptation sample; Pinto-Gueveia et al., 2012). Other studies reported mixed results for different adaptation samples (clinical patients, students, students’ acquaintances, outpatients, etc.), seemingly finding significant or nonsignificant gender differences, independent of the used sample type. All the significant differences found showed lower EA for men (Monestès et al., 2009; Ruiz, Langer, Luciano, Cangas & Beltrán, 2013; Szabó et al., 2011).

Generally, these results were thought to be accidental, reflecting some properties specific to a given sample (Bond et al., 2011) or related to higher levels of psychological suffering in women (Szabó et al., 2011). Although it is generally accepted that there are no systematic gender differences on AAQ-II scores, the validation studies failed to offer unequivocal support for this statement, leaving open the question of gender differences in AAQ-II scores. It is important to mention that in each study mean comparison (or correlation) was based only on
manifest variable scores, without previously analyzing the gender measurement invariance of the scale. We found only two studies that investigated gender differences at latent variable level. In one of the studies, Fledderus et al. (2012) used item response theory (IRT) analysis in order to analyze cross-sample properties of AAQ-II items. Analyzing a sample of 376 adults with mild to moderate levels of depression and anxiety, they confirmed the initial unidimensional factor structure of the instrument, and found that item functioning was independent of gender. In another study, Karekla & Michaelidis (2017) used a Multigroup Confirmatory Factor Analysis approach to establish clinical and gender measurement invariance of AAQ-II, and found weak measurement invariance between non-clinical and clinical samples, and non-significant latent mean difference (.121, p=.56) between gender groups.

The present study: purpose

In order to further explore the problem of gender differences and get beyond the analysis of manifest variables (common to most of the cited studies), invariance analysis offers a proper conceptual framework for comparing latent variables, allowing to better understand whether the observed differences should be regarded as a genuine construct level difference between the two populations or rather as a methodological artifact (the scale being biased toward one population). Our study aims to address this research question, namely to analyze the measurement invariance of AAQ-II and latent mean differences between gender groups for the Hungarian version of the AAQ-II, and to analyze the convergent validity of the scale.

Methods

Participants

The sample \((N = 342)\) was selected from a larger population of undergraduate students enrolled in distance learning programs at Babes-Bolyai University, Cluj-Napoca on voluntary basis using a “snow ball” selection technique, male participants representing 37.75% of the sample. Mean age was \(m = 32.20 (SD = 7.62)\) for men, and \(m = 31.71 (SD = 7.81)\) for women, there were no significant age differences between men and women \((t = 0.553, df = 323, p = .581)\). Consent to participate was obtained after informing participants about their tasks, without informing them about the purpose of our research. There was no payment or any other incentive for participation in the study.

Instrument

*Acceptance and Action Questionnaire (AAQ-II, Bond et al., 2011):* the 7-item AAQ-II is a self-report instrument used to assess individual differences in EA. The questionnaire consists of seven statements (e.g., “Emotions cause problems in
my life”), participants being asked to rate each statement on a 7-point Likert ranging from 1 (never true) to 7 (always true). Preliminary data of AAQ-II revealed adequate psychometric properties (Bond et al., 2011). The AAQ-II was also found to be highly reliable, for the entire sample the calculated Cronbach's alpha = .856 (Cronbach's alpha = .868 for male and Cronbach's alpha = .845 for female) (Szabó et al., 2011).

*Depression, Anxiety and Stress Scale (DASS; Lovibond & Lovibond, 1995)* is a 42-item questionnaire developed by Lovibond & Lovibond (1995) which includes three self-report scales measuring depression (DASS-D), anxiety (DASS-A) and stress (DASS-S). Each of the three scales contains 14 items scored on a 4-point Likert scale (from 0 - did not apply to me at all to 3 - applies to me very much or most of the time) to evaluate emotions experienced during the previous week. According to several studies (Antony, Bieling, Cox, Enns & Swinson, 1998; Crawford & Henry, 2003; Dahm, Wong & Ponsford, 2013) DASS shows good reliability and validity in clinical and non-clinical population.

*Mindfulness, Attention and Awareness Scale (MAAS; Brown & Ryan, 2003):* the MAAS is a unidimensional measure of mindfulness, operationalized as lack of attention and awareness of what is occurring in the present. It consists of 15 items, each of them involving responses on a 6-point scale (1 - almost always, 6 - almost never). It has been shown that MAAS has good convergent validity (Brown & Ryan, 203) and internal consistency (Cronbach's alpha from .82 to .91) (Peterson & Reis, 1992).

**Procedure**

This study was approved by the Institutional Review Board of Babes-Bolyai University, Cluj Napoca. The translation of the original AAQ-II to Hungarian was carried out by the third and fourth authors, and the back-translation was provided by a professional translator. The adaptation process was based on the Guidelines for the Translation and Adaptation of Tests (Hambleton, 1994). Participants individually completed the questionnaires after obtaining informed consent. We excluded incomplete and uninterpretable response sheets (0.2 % of the initial sample).

**Data analysis**

The aim of the initial confirmatory factor analysis (CFA) was to validate the factorial structure of AAQ-II in the two populations defined on the basis of gender. This item level CFA was performed separately, using data collected from the participants belonging to different gender categories. In order to set the scale of the latent factor, the factor loading of one indicator (marker indicator) was set to 1
(unit loading identification) (Brown, 2006). In addition, in each of the CFA, measurement error terms for the following items were allowed to correlate due to similarity in wording: 1 with 4 and 2 with 3 (Monestes et al., 2016).

The maximum likelihood (ML) function is a robust estimation method that allows undistorted parameter estimation until the absolute values of skewness below 3 and kurtosis below 8 (Kline, 2005). Considering that skewness and kurtosis in our study were below these thresholds, maximum likelihood (ML) function of IBM AMOS 20 was used, even if Mardia’s normality test was found to be significant (Mardia & Kanazawa, 1983). In order to assess how well the CFA models fit the data, the following fit indicators were used: $\chi^2$ test, $GFI > .90$, $TLI > .90$, $CFI > .90$, $SRMR < 0.05$ and $RMSEA < 0.08$ (Hu & Bentler, 1999).

To test for measurement invariance, a series of multi-group CFA were conducted. Four hypotheses were formulated, testing for invariance in hierarchical fashion, imposing progressive constraints on the baseline model: (a) on the initial model, in which the parameters were specified to be equal across groups (configural invariance); (b) on the factor-loading pattern (metric invariance), (c) on the intercepts of the observed variables (scalar invariance); and (d) on the error variance of measured variables. For each nested model, ML estimation with a Pearson product–moment covariance matrix was used, and the factor loading of the first variable was set to 1 (unit loading identification, see Kline, 2005). In order to test the invariance among different nested models, we examined the changes in $\chi^2$ ($\Delta\chi^2$) complemented by changes of $CFI$ ($\DeltaCFI$), since $\Delta\chi^2$ is sensitive to large sample size and violation of normality assumptions (Cheung & Rensvold, 2002). A decrease of $CFI$ with $\geq .01$ is considered to be a significant decrement of model fit and lack of invariance across gender groups.

To estimate and test the statistical significance of sex differences for the latent construct mean, a combined mean and covariance matrix was used (Bentler, 1989). According to this, the female group was chosen as a baseline group, and its latent mean was set to zero. The latent mean of the male group was estimated, this value representing the difference between the factor mean in the two groups (Aiken, Stein & Bentler, 1994).

Results

Descriptive statistics

Descriptive statistics indicators (mean, standard deviation, skewness and kurtosis) for each item of AAQ-II are presented in table 1. The mean score of items varies between 1.84 and 2.61 for males and 2.06 and 2.87 for females. Sample skewness range between 0.61 and 1.42 for males, 0.419 and 1.2 for females, while the kurtosis values varies between -0.46 and 1.06 for males and -0.44 and 0.89 for females. The Mardia’s multivariate normality test indicated that there are some deviations from multivariate normality in both samples.
Table 1. Descriptive statistics (mean, standard deviation, inter-item correlation and multivariate kurtosis) for each item of the H-AAQII

<table>
<thead>
<tr>
<th>Gender</th>
<th>Variables</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Item1</td>
<td>Item2</td>
<td>Item3</td>
</tr>
<tr>
<td>Item1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Item2</td>
<td>.57</td>
<td>-</td>
<td>.346</td>
</tr>
<tr>
<td>Item3</td>
<td>.5</td>
<td>.612</td>
<td>-</td>
</tr>
<tr>
<td>Item4</td>
<td>.67</td>
<td>.607</td>
<td>.552</td>
</tr>
<tr>
<td>Item5</td>
<td>.59</td>
<td>.558</td>
<td>.435</td>
</tr>
<tr>
<td>Item6</td>
<td>.42</td>
<td>.378</td>
<td>.390</td>
</tr>
<tr>
<td>Item7</td>
<td>.46</td>
<td>.332</td>
<td>.380</td>
</tr>
<tr>
<td>m</td>
<td>2.12</td>
<td>2.06</td>
<td>1.93</td>
</tr>
<tr>
<td>sd</td>
<td>1.22</td>
<td>1.12</td>
<td>1.1</td>
</tr>
<tr>
<td>Mardia normality (c.r.)</td>
<td>8.290</td>
<td>(4.161)</td>
<td>10.41</td>
</tr>
</tbody>
</table>

m – mean, sd – standard deviation, c.r. – critical ratio

AAQ-II factor structure

As shown in tables 2 and 3, the results of CFA for the two groups (males and females) are relatively similar, confirming the one factor solution in each sample. The overall fit indices computed for males show a very good fit with the data $\chi^2 = 24.71$, $df = 12$, $p = .016$; $CFI = .97$; $SRMR = .04$ and $RMSEA [90\%] = .09 [.04, .14]$. The same goodness of fit indicators computed for the female group are $\chi^2 = 20.94$, $df = 12$, $p = .051$; $CFI = .98$; $SRMR = .03$ and $RMSEA [90\%] = .06 [.01, .10]$, and show that the data fit with the model is acceptable. Beyond the overall fit, the standardized parameter estimates for the factor loadings are all in the acceptable range, their values varying between .53 and .78 for males and .52 and .72 for females.

Table 2. Standardized Regression Weights and Squared Multiple Correlations for the items of H-AAQ II.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Whole Sample</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>$\lambda$</td>
<td>$R^2$</td>
<td>$\lambda$</td>
</tr>
<tr>
<td>Item 1</td>
<td>.69</td>
<td>.47</td>
<td>.78</td>
</tr>
<tr>
<td>Item 2</td>
<td>.59</td>
<td>.35</td>
<td>.72</td>
</tr>
<tr>
<td>Item 3</td>
<td>.7</td>
<td>.49</td>
<td>.64</td>
</tr>
<tr>
<td>Item 4</td>
<td>.71</td>
<td>.5</td>
<td>.8</td>
</tr>
<tr>
<td>Item 5</td>
<td>.66</td>
<td>.44</td>
<td>.79</td>
</tr>
<tr>
<td>Item 6</td>
<td>.65</td>
<td>.42</td>
<td>.53</td>
</tr>
<tr>
<td>Item 7</td>
<td>.69</td>
<td>.47</td>
<td>.58</td>
</tr>
</tbody>
</table>

$\lambda$ - standardized regression weights, $R^2$ - squared multiple correlations
**Measurement and population invariance**

The multi-group CFA analysis followed two major steps. First, measurement invariance was hierarchically tested at each of the levels: configural, factor loadings (metric) and intercepts (strong scalar) (Meredith, 1993; Widaman & Reise, 1997). A series of hierarchically nested models were tested, constraining a set of parameters to be equal across groups in the more restricted, but not in the less restricted model. The results obtained for the first model offer support to the configural validity across gender groups, \(\chi^2 = 45.65, df = 24, p = .005; CFI = .976; SRMR = .04\) and \(RMSEA [90\%] = .05 [.03, .07]\). Adding a second constraint to the model, namely constraining regression weights in the two groups to be equal, resulted in a significant increase of \(\chi^2, (\Delta\chi^2 = 25.01, \Delta df = 6)\) and a significant decrease of CFI \((\Delta CFI = -.022)\). This result shows that some of the constrained regression weights are not equal across the compared groups. Based on modification indices offered by AMOS 20, we freed the factor loading of item 6 by removing the equality constraint (Model 4a in table 3). The obtained \(\Delta\chi^2 = 11.26 (\Delta df = 4)\) was found to be non-significant, but the \(\Delta CFI < .01 (\Delta CFI = -.008)\) provided further support to the partial metric invariance of the AAQ-II. Constraining of the intercept to be equal across groups (leaving the intercept for item 6 unconstrained) resulted in a non-significant increase of \(\Delta\chi^2 (\Delta\chi^2= 3.04, \Delta df = 4)\), and also a non-significant increase of \(\Delta CFI < .01 (\Delta CFI = -.001)\) (see table 3). The obtained pattern of results sustains the partial measurement invariance of AAQ-II, item 6 being non-invariant regarding its factor loading.

**Table 3.** Tests for Measurement Invariance for a one-factor solution for the H-AAQ II.

<table>
<thead>
<tr>
<th>Model</th>
<th>Factor</th>
<th>(\chi^2)</th>
<th>df</th>
<th>(p)</th>
<th>(\chi^2/N)</th>
<th>CFI</th>
<th>SRMR</th>
<th>RMSEA [90%]</th>
<th>(\Delta\chi^2)</th>
<th>(\Delta df)</th>
<th>(\Delta CFI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male</td>
<td>24.71</td>
<td>12</td>
<td>.016</td>
<td>2.06</td>
<td>.97</td>
<td>.04</td>
<td>.09 [.04, .14]</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>20.94</td>
<td>12</td>
<td>.051</td>
<td>1.75</td>
<td>.98</td>
<td>.03</td>
<td>.06 [.01, .10]</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Configural Invariance</td>
<td>45.65</td>
<td>24</td>
<td>.005</td>
<td>1.9</td>
<td>.976</td>
<td>.04</td>
<td>.05 [.03, .07]</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Metric Invariance</td>
<td>70.66</td>
<td>30</td>
<td>.001</td>
<td>2.36</td>
<td>.954</td>
<td>.06</td>
<td>.06 [.04, .08]</td>
<td>25.01*</td>
<td>6</td>
<td>-.022</td>
</tr>
<tr>
<td>4a</td>
<td>Metric Invariance</td>
<td>56.91</td>
<td>28</td>
<td>.001</td>
<td>2.03</td>
<td>.968</td>
<td>.05</td>
<td>.06 [.03, .08]</td>
<td>11.26*</td>
<td>4</td>
<td>-.008</td>
</tr>
<tr>
<td>5</td>
<td>Scalar Invariance</td>
<td>60.05</td>
<td>32</td>
<td>.002</td>
<td>1.88</td>
<td>.969</td>
<td>.05</td>
<td>.05 [.03, .07]</td>
<td>3.04*</td>
<td>4</td>
<td>-.001</td>
</tr>
</tbody>
</table>

TLI - Tucker-Lewis Fit index, CFI - comparative fit index, SRMR - Standardized Root Mean Square Residual, RMSEA - Root-mean-square error of approximation, \(\Delta\chi^2\) - difference in \(\chi^2\) test, \(\Delta CFI\) – difference in CFI.

a item loading equality constraints for item 5 and 6 were released.
As a second step of the analysis, latent factor mean differences were tested, given that at least two factor loadings and intercepts (except the marker indicator) were found to be invariant across groups (van de Schoot et al., 2013). Additional constrains on the Scalar Invariance Model (Model 5) were imposed by setting the latent mean for the female group to 0 while the latent mean for the male group was freely estimated (see table 3). The calculated latent mean for the male group was \(-0.34\) (\(SE = 0.12\), \(C.R. = -2.7\), \(p = .006\)), meaning that males have significantly lower EA compared to the reference group (females).

**Concurrent validity**

AAQ-II total score correlations with other scales, MAAS and DAS (total score of each subscale) were analyzed, total score being computed for the entire sample.

<p>| Table 4. Pearson correlation coefficients of AAQ II with DASS and MAAS scales. |</p>
<table>
<thead>
<tr>
<th>AAQ-II</th>
<th>DASS-D</th>
<th>DASS-A</th>
<th>DASS-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>DASS-D</td>
<td>.54**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DASS-A</td>
<td>.57**</td>
<td>.8**</td>
<td>-</td>
</tr>
<tr>
<td>DASS-S</td>
<td>.54**</td>
<td>.76**</td>
<td>.67**</td>
</tr>
<tr>
<td>MAAS</td>
<td>-.22*</td>
<td>-.27**</td>
<td>-.22*</td>
</tr>
</tbody>
</table>

AAQ-II – Acceptance Action Questionnaire; DASS-D – Depression Anxiety Stress Scale (Depression subscale); DASS-A - Depression Anxiety Stress Scale (Anxiety subscale); DASS-S - Depression Anxiety Stress Scale (Stress subscale); MAAS – Mindful Attention Awareness Scale.

The AAQ-II correlates positively with all three subscales of DAS, DAS-Depression (\(r = .54, p < .001\)), DAS-Anxiety (\(r = .57, p < .001\)) and DAS-Stress (\(r = .54, p < .001\)), showing that EA increases the probability of anxiety, depression and stress. We have also found a negative correlation of AAQ-II with the MAAS score (\(r = -.22, p < .05\)), meaning that EA is inversely related to mindfulness (see table 4).

**Discussion**

Psychological flexibility/inflexibility is the central construct in ACT, a unified model of human functioning, adaptability and psychopathology (Hayes et al., 2012). Within this frame, the 7- item AAQ-II (Bond et al., 2011) represents the current measure of generic EA. As a relatively new model, studies addressing gender differences are rather scarce, with sparse and somehow puzzling results. Although the general stance asserts that there are no gender influences on EA, some studies have shown differences between men and women, with higher levels of EA scores found for women (Monestès et al., 2009; Ruiz, Langer, Luciano, Cangas & Beltrán, 2013; Szabó et al., 2011).
From the perspective of measurement invariance, statistically significant differences in the AAQ-II scores can be interpreted in two ways, either as a genuine difference between the gender groups regarding EA, or as an artifactual difference due to specific properties of the AAQ-II (random score fluctuation caused by sampling or measurement errors). Most of the existing studies investigated gender differences only at the level of manifest variables, without performing statistical comparison at the latent variable level.

The current study aimed to examine the construct validity and measurement invariance of AAQ-II across gender categories, and gender-related latent mean differences of the AAQ-II.

Our study provided additional support to the unidimensional factor structure of AAQ-II in line with previous research (Fledderus et al., 2012; McMullen, Taylor, & Hunter, 2015; Bond et al., 2011). Similarly, our findings sustain the construct validity of AAQ-II. Statistically significant positive correlation with DASS subscale (ranging between \( r = .54 - .57 \)), and negative correlation with MASS (r = -.22) offer further support to the role that EA plays in psychopathology. Regarding measurement invariance, the results obtained in multi-group CFA showed that the dimensionality of the AAQ-II is the same across gender groups, namely the factor structure of the scale does not change across gender (same number of factors and same pattern of factor loadings). Regarding metric invariance, our analysis supports only partial metric invariance of the AAQ-II scale, factor loadings of items 5 and 6 being found non-invariant across gender. We found that the model consisting equality constraints of intercepts across gender groups (excluding intercepts for item 5 and 6) did not alter significantly the fit of the measurement model to data, supporting the strong invariance of the scale across gender.

These findings suggest that different groups show (a) the same structure of the AAQ-II (e.g., there is a single factor which is associated with the same items); (b) equal factor loadings of items on the latent factor (except items 5 and 6); and (c) the same intercepts for the observed variables (intercept for items 5 and 6 were not tested).

The validity of latent mean differences depends on the proportion of estimated parameters that are invariant (van de Scoot et al., 2013). The generally accepted criterion for testing latent mean differences using partial scalar invariance is that at least one intercept (beyond the indicator variable’s intercept) should be invariant (Dimitrov, 2006). Given the proportion of constrained and unconstrained intercept values across gender groups, the degree of partial measurement invariance was sufficiently high to proceed with testing latent mean difference on EA constructs. Our results revealed significant statistical differences between gender groups at the latent variable level, women showing higher EA compared to men.

Despite the mixed results regarding gender differences in EA, the generally held assumption is that there are no gender differences (Bond et al., 2011; Fledderus et al., 2012). Nevertheless, conclusions regarding gender differences were drawn on the basis of statistical comparisons of the obtained scores in most
studies so far. Based on the basic principle of psychometrics, the obtained score is the sum of the true score and the measurement error (Thompson & Green, 2006). Comparing scores could imply, on one hand, true differences due to systematic factors (e.g., differences due to gender) and, on the other hand, behind any true difference, unsystematic differences due to random error variance, which can lead to biased statistical inferences (Brown, 2006). To our knowledge, only two studies investigated latent factor comparison across gender groups on AAQ-II: Fledderus et al. (2012) and Karekla & Michaelidis (2017). These authors, using a different data analytic procedure, namely the IRT method to estimate Differential Item Functioning (Fledderus et al., 2012) and MGCFA (Karekla & Michaelidis, 2017), found no significant gender effect on item functioning or on latent mean differences.

Our results seem to contradict the generally held assumption of no difference between gender groups, as we found significant latent mean differences between men and women, men showing lower EA. This result seems to be in line with all adaptation studies that found the same pattern off differences (higher EA for women) and contradicts those studies that did not find a significant difference at latent level, using IRT and MGCFA (Fledderus et al., 2012; Karekla & Michaelidis, 2017).

Typically, these contradictory results in gender differences in EA are explained in terms of gender-stereotypic socialization. According to this hypothesis, attitudes towards emotions, beliefs about emotions, and reactions to emotional information are basically influenced by gender-role expectations encouraged by specific social and cultural contexts, emotions playing an important role in how men and women define their gender identity. In line with previous research (e.g., Jansz, 2000), a study conducted by Fischer, Rodriguez, Mosquera, van Vianen & Manstead (2004) found evidence supporting the idea that, typically, Western societies encourage a pattern of restrictive emotionality in males, and discourage powerlessness and vulnerability.

Considering these results and taking into account that the AAQ-II represents a measure of avoidance of unwanted internal events - as opposed to acceptance -, culturally dependent gender differences in experiential avoidance may reflect male lower openness toward detaching from gender-stereotypes at the level of specific social-cultural contexts (male participants responses rely more on traditional gender values). From the perspective of MGCFA invariance testing, this effect could be conceptualized as a systematic gender bias factor, that would result in the non-invariance of intercepts across gender. As this was not the case, our results seem to support scalar invariance of AAQ-II items, disqualifying gender specific response bias (e.g., openness towards detaching from gender-stereotypes) as a possible interpretation of results.

Another hypothesis of socio-cultural differences that could account for gender differences in EA is that of socio-cultural and economic conditions, specific to some cultural contexts, can elicit more frequent and more intense negative emotions in women compared to men. According to the ACT model, the tendency
to EA could be higher in situations that are especially distressing (Hayes et al., 2004). Thus, we can hypothesize that contexts which confront individuals more frequently with painful and distressing situations facilitate the development of higher tendencies towards higher avoidance levels. Freeman & Freeman’s (2013) empirical review underlines the fact that women are more exposed to stressful situations given the social inequalities, environmental pressure, social role burden characterizing patriarchal societies. As a consequence, women in patriarchal societies have a higher tendency to develop EA. The question remains whether women in the samples involved in the adaptation of AAQ-II are equally exposed to the aforementioned psychological stressors. Their presence or absence (and level of impact) could explain the contradictory nature of the existing results.

To summarize, the current study supports the measurement and structural invariance of the trait EA as measured by the AAQ-II across gender groups, and suggests that comparisons in trait scores can be interpreted as representing underlying mean differences at the construct level. At the same time, we believe that further research on gender differences in EA is important to bring more light on inner and outer contexts that may, contribute to the development of such differences, and to design appropriate interventions, to alleviate unnecessary psychological suffering.

References


Abstract
Wellness is believed to be a precondition for students’ success in university. Therefore, many higher education institutions are committed to enhancing student wellness through psychoeducation and counselling program. The present study aimed to test the efficacy of Acceptance and Commitment Therapy (ACT) in enhancing the level of wellness among first-year university students. An experimental study was conducted over six months by implementing a pre-post control group design to measure the benefits of ACT for first-year university students. Exactly 58 students voluntarily participated in serial group counselling, with participants distributed equally between the experimental and control groups. The Five Factor Wellness Inventory, the Acceptance and Action Questionnaire and Client Satisfaction Questionnaire were used as measurement tools. Six core ACT processes were applied over 10 treatment sessions. Comparison of the statistical results for pre- and post-test showed that the wellness score of experimental group was higher than control groups ($F=1325.559; p<0.005$). This study asserts that ACT is a feasible and practical way to enhance students’ wellness.

Keywords: Acceptance and Commitment Therapy, wellness, first-year college student

1. Introduction
University life has a dual impact on new students. On one hand, freshmen may find adapting to and coping with the university environment difficult because of its different system, culture, and social network (Choate & Smith, 2003). For example, students must adapt to a flexible class schedule and new expectations...
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from lecturers (Clark, 2005; Smith & Wertlieb, 2005), as well as adjusting to new academic and social roles (Verger et al., 2009). On the other hand, university life may present opportunities that benefit students. For example, Arnett (2014) suggested college students gain more freedom and autonomy to explore their personal, social, and sexual identity.

Both challenges and opportunities may give rise to problems relating to students’ psychological instability, feelings of being “in the middle” (between adulthood and teenage years), and the exploration of identity relating to love, work, and worldview (Arnett, 2000). These challenges, opportunities, and developmental tasks increase students’ risk for mental health problems (American College Health Association, 2018). Therefore, the success of first-year students may be jeopardized by psychological issues that affect their academic performance, such as lower grades for exams or courses, incomplete or dropped courses, and disruption experienced when completing a practicum or thesis (Al-Tabaa, 2016; American College Health Association, 2018). In addition to affecting academic performance, psychological issues may threaten students’ social adjustment, life satisfaction, and wellness (Al-Tabaa, 2016; Daugherty & Lane, 1999; Ross, Niebling, & Heckert, 1999).

Wellness makes vital contributions to determining the success of new students in adjusting to university life. In particular, wellness is believed to have a protective function in terms of being a predictor of personal capacity and students’ success (Ballentine, 2010; Horton & Snyder, 2009). According to Myers, Sweeney, and Witmer (2000) wellness is “a way of life oriented toward optimal health and well-being, in which body, mind, and spirit are integrated by the individual to live life more fully within the human and natural community. Ideally, it is the optimum state of health and well-being that each individual is capable of achieving”. Wellness integrates multiple domains of health including physical, psychological, social and spiritual.

The indivisible self model of wellness is a new model in counselling practices, which offers some advantages to the field. This model developed based on Adlerian life tasks: spirituality, self-direction, work and leisure, friendship, and love. This model emerged based on a revision of the wellness wheel model, through structural equation modelling involving 5,380 persons (Hattie, Myers, & Sweeney, 2004). The model uses a strengths-based approach focused on the characteristics of healthy people and their choice-oriented behaviors (Myers & Sweeney, 2004; Myers & Sweeney, 2008). The indivisible self model of wellness assumes that the self is central and indivisible. In this model, wellness is placed at the center and labelled the first-order factor. Second-order factors consist of five aspects of the self: creative self, coping self, social self, essential self, and physical self (Myers & Sweeney, 2004). These five factors construct the whole self or indivisible-self. Each of the second order factors comprises subfactors or third-order factors. These third-order factors consist of 17 components that contribute to the wellness of each aspect of the self and total wellness.
Myers and Sweeney (2005) stated that the purpose of the indivisible self model of wellness is to identify factors which are contributed to healthy living and human functioning. The indivisibility of self has signified the whole (wellness) rather than the factors and the interaction between the whole and its factors (Ansbacher, 1967). The indivisible self model of wellness consists of three-order factors. The first is the higher-order factor is called wellness which consists of the sum of all items and is a measure of one’s overall well-being. The second-order factor consists of five selves, the creative self, coping self, social self, essential self and physical self. These five selves were seen as the factors embracing the self, or the indivisible self (Myers & Sweeney, 2004).

The “creative self” is “the combination of attributes that each of us forms to make a unique place among others in our social interactions” (Myers, 2009). There are five factors in the creative self: thinking, emotions, control, positive humor, and work. The “coping self” is encompassed the factors that regulate human responses to life events and provide a resource against negative effects. There are four factors within this self: realistic beliefs, stress management, self-worth, and leisure. The “social self” includes two factors: friendship and love. The “essential self” is composed of four factors: spirituality, self-care, gender identity, and cultural identity. The “physical self” consists of two factors: exercise and nutrition. Although the physical self is slightly ignored in well-being discussion, the evidence supported the importance of physical factor in holistic wellbeing (Myers et al., 2000).

Besides five selves, the model incorporated the contextual variables which assumes that environmental and contextual factors are important in understanding human behavior (Myers & Sweeney, 2004). There are four contexts are presented: local, institutional, global, and chronometrical. “Local contexts” are the contexts in which individuals live most often –families, neighborhoods, and communities. “Institutional contexts” are including education, religion, government, business and industry, and the media. These contexts affect human lives direct and indirectly. “Global contexts” are including politics, culture, global events, and environmental. The final context is “chronometrical” which reflects the recognition that people change over time (Myers et al., 2000). Each of contextual factor influences individual, vice versa.

Several studies have shown that wellness is significantly associated with mental health, including higher life satisfaction (Danitz & Orsillo, 2014) and lower stress and depression (Muto, Hayes, & Jeffcoat, 2011). In addition, higher wellness and psychological wellbeing is related to educational successes, including educational aspiration, course attendance, amount of time for study, and higher Grade Point Average (Adesina, 2013; Choate & Smith, 2003; Chow, 2010; Tanigoshi, Kontos, & Remley, 2008; Young, Turnage–Butterbaugh, Degges–White, & Mossing, 2015).

Given these important considerations, wellness promotion and preventive services targeted to students are necessary. Wellness promotion is considered an initial strategy to help first-year students adjust to university life. Conley, Durlak,
and Dickson (2013) noted that such services can smooth the transition between high school and university.

LaFountaine, Neisen, and Parsons (2006); Myers (1992); and Sarı (2003) suggested wellness promotion is an effective strategy to prevent psychological problems and improve students’ capacity to cope with university life. In addition, Sax (1997) noted that wellness promotion is an effective way to educate new students on a healthy lifestyle in college. Preventive and promotional services provide an opportunity for students to improve their psychological strength (Seligman, 2002), and facilitate positive growth and development (Goss, Cuddihy, & Michaud-Tomson, 2010; Myers & Sweeney, 2008).

Currently, counselling practices largely adopt a wellness perspective as part of the curriculum and standards for counselling education (Yager & Tovar-Blank, 2007), marking a shift from treatment and curative approach to a preventive and strength-based approach. Therefore, wellness promotion is an alternative strategy for empowering students to develop their capacity to cope with life challenges. Myers and Sweeney (2008) suggested that wellness promotion facilitates human functioning in mind, body, and spirit, which is known as indivisibility or holism.

Promotion of wellness may be facilitated by various strategies, including counselling and psychoeducation. Conley, Durlak, and Kirsch (2015) found that a cognitive behavioral therapy (CBT) approach was a promising and effective approach for mental health promotion and prevention. CBT enables students to develop rational ways of thinking, emotional regulation, and healthy lifestyles (Battles, 2016). As a "third generation," CBT modality, acceptance and commitment therapy (ACT) is an alternative approach to enhancing wellness. ACT encourages students to develop flexible thought patterns, self-awareness, and value-based behavior to enhance their wellness. ACT employs six core processes to facilitate changes: acceptance, cognitive defusion, being present, self as context, values and committed action. The processes are overlapping, interrelated and flexible in practice. The first process is “acceptance”. From an ACT perspective, acceptance means making room to unpleasant feelings, sensations, emotions and urges (Harris, 2009). Acceptance is also being presently minded with an active state of awareness of private events (thoughts, feelings, bodily sensations), without attempting to change it (Battles, 2016; Hayes, 2016; Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Hayes & Twohig, 2008).

The second is “cognitive defusion”. It is the process to alter the undesirable functions of thoughts and other private events by taking a step back and acknowledging at language without letting language influence behavior (Battles, 2016; Hayes, 2016). The third is “being present”. This process involves ongoing non-judgmental contact with psychological and environmental events. Being present mostly facilitated by mindfulness-based exercises which allowing oneself to be in the moment with focus, willingness, flexibility and consistent with their values (Hayes, Levin, Plumb-Vilardaga, Villatte, & Pistorello, 2013).
The fourth is “self as contexts”. According to Hayes and Twohig (2008), there are three types of self within ACT: the conceptualized self, the self as a process, and the observing self, or self as context. The “conceptualized self” is the self that is constituted of a person's self-evaluations and categorizations. The “self as a process” involves a continuous awareness of present experiences in a nonjudgmental way which involves noticing each experience as it is. The “observing self” or “self as contexts” is the self that adequately giving space with private events. The conceptualized self, the self as a process, and the self as context are the process of changes in person’s sense of self. The sense of self influence individual’s wellness especially in subfactors of self-worth, realistic belief, gender and cultural identity. The fifth is values, which are chosen qualities of purposive action and used as a compass of life. Lastly is committed action. It is an effective action guided by values which facilitates a wide range of thoughts and feelings, both pleasant and unpleasant (Harris, 2009).

Several studies have shown that ACT is effective for increasing wellness. Danitz and Orsillo (2014) showed ACT improved the psychological wellness of first-year students. Muto et al. (2011) found that ACT improved the psychological health of Japanese international students. Other studies revealed that ACT significantly improved coping and psychological adjustment (Cook & Hayes, 2010), and fostered emotional and cognitive regulation (Masuda, Hayes, et al., 2009).

ACT has also emerged as a promising approach for Asian populations. Yu and Son (2016) reported ACT significantly improved self-control among college students in Korea. In addition, Muto et al. (2011) revealed that ACT was effective for Japanese students. Kusumawardhani (2012) and Mubina (2016) enriched ACT practices in Asian populations. Their studies demonstrated that ACT was suited to enhancing wellness and psychological wellbeing as well as reducing experiential avoidance in Indonesian populations.

Studies on student wellness to date largely discuss the application of therapeutic approaches in clinical populations. A number of studies showed that ACT was effective in improving the wellness of depressive, anxious, and stressed college students (Danitz & Orsillo, 2014; Forman, Shaw, et al., 2012). Another study found ACT was efficacious in improving the psychological health of college students with eating disorders (Masuda, Price, Anderson, & Wendell, 2010). Furthermore, Kusumawardhani (2012) reported that ACT significantly improved the psychological wellbeing of young people after a relationship break-up.

Few studies have examined the efficacy of ACT in enhancing wellness in non-clinical populations. Räsänen, Lappalainen, Muotka, Tolvanen, and Lappalainen (2016) described how online guided ACT significantly improved the psychological wellbeing of college students. However, that was the only published study on the efficacy of ACT in improving psychological wellbeing in a non-clinical population. Therefore, the expansion of research in this area is needed to enrich the evidence for the efficacy of ACT.
The six core processes of ACT are aimed to foster psychological flexibility. Psychological flexibility is defined as “the ability to fully contact the present moment and the thoughts and feelings it contains without needless defense, and depending on what the situation affords, persisting in or changing behavior in the pursuit of goals and values” (Hayes, Pistorello, & Levin, 2012). Psychological flexibility is the ability to accept private events and continue moving forward in a valued base direction (Wolgast, 2014).

Psychological flexibility is related to lower psychopathology (Fischer, Smout, & Delfabbro, 2016), emotion regulation (Biron & Van Veldhoven, 2012) and predictor to psychological health (Masuda, Price, Anderson, Schmertz, & Calamaras, 2009). In several studies, psychological flexibility is considered as moderator to the outcome of ACT (Kashdan & Kane, 2011; Palm & Follette, 2011; Probst, Baumeister, McCracken, & Lin, 2019). In this study psychological flexibility is employed as a control variable for counselling outcome.

This study examined the preliminary effects of ACT in enhancing wellness among Indonesian students. The main objective of this study was to evaluate the effectiveness of ACT in enhancing wellness among first-year university students. The null hypothesis of this study was that the wellness of first-year students who received ACT was higher than waiting list group.

2. Methods

Sample

The sample of this study was 58 participants. Participants' inclusion in this experiment was based on several criteria, including 1) the first-year student in Faculty of Education located in the Rawamangun campus, 2) students whose wellness score below Asian Norm (69), 3) willing to participate in group counselling and sign an informed consent form. The pretest data was collected by visited every classroom and asked students to fill in the 5F-WELL and the AAQ II. In total, 515 students completed 5F-WELL. Only 331 scored below the cut-off of 69 (Asian Norm). The Asian norm is the statistical norm created by Mind Garden for 5F-WELL based on 278 Asian people. The norm was used to standardize the actual score with wider population. Initial recruitment was conducted by distributing an invitation letter through WhatsApp and short text message to 313 students. The invitation letter contains the information on the purpose, benefit, schedule, place of the study and confidentiality. From a total of 331 students, 82 (24.7%) students responded to the invitation and voluntarily agreed to join group counselling; while the other 249 (75.2%) students did not respond. 82 students who responded the invitation received verbal and written information on the purposes of the study, and its potential benefits and risks. Students were also assured of the confidentiality of all data. From 82 students only 58 student who willing to participate in the study and sign the informed consent. The consent form consisted of consent for information on confidentiality and an explanation of the proposed study.
After recruitment, participants were interviewed during a pre-counselling session to ensure their commitment and availability for counselling. Once they stated their commitment, they were randomly assigned to the experimental or control group. Fifty-eight students aged 18–19 years committed to participating in group counselling; 56 females and two males. There were 29 students in the experimental group and 29 in the control group. The sample was considered to have fulfilled the minimum criteria for experimental and causal-comparative research (Gall, Gall, & Borg, 2003; Heppner, Wampold, & Kivlighan, 2007).

**Figure 1.** Participant screening and assignment flow.

**Instruments**

The measurement instruments were the Five Factor Wellness Inventory (5F-WEL) and Client Satisfaction Questionnaire (CSQ-8). The 5F-WEL is a self-reported measure which was administered to identify students’ level of wellness.
The 5F-WEL includes 73 items that reflect specific attitudinal and behavioral statements along with 18 additional experimental items, giving a total of 91 items. The additional items were including contextual variables and an item on life satisfaction. Although contextual variables and life satisfaction were not included in the treatment, those factors were influence the holism of wellness. Responses are on a 4-point Likert-type scale: strongly agree, agree, disagree and strongly disagree (Myers, Luecht, & Sweeney, 2004), with alpha coefficients for total wellness of 0.94 (Hattie et al., 2004). Several examples of items to measure creative self: “I can express both my good and bad feelings appropriately” and “I seek ways to stimulate my thinking and increase my learning”. These items are used to measure emotion and thinking. The higher score means the higher capacity to manage the emotion and thinking.

In this study, the 5F-WEL was translated into the Indonesian language (Bahasa) using a back-translation approach (Hambleton, Merenda, & Spielberger, 2004). The translation was reviewed by the experts in psychometry, language and psychology. In this study, the alpha coefficient for total wellness was .971.

To measure psychological flexibility was used the Acceptance and Action Questionnaire-II (AAQ-II) (Ciarrochi & Bilich, 2007). AAQ II is the most widely used measure psychological flexibility. The original AAQ-2 item pool was developed by a panel of 12 ACT researchers and practitioners to reflect the general construct of psychological flexibility (Luoma, Drake, Kohlenberg, & Hayes, 2011). The items on the AAQ-2 are rated on a 7 point Likert-type scale from 1 (never true) to 7 (always true). Low scores on the AAQ-2 are reflective of greater psychological flexibility. Bond et al. (2011) reported that the mean alpha coefficient of AAQ II was .84 (.78 -.88), and the 3- and 12-month test-retest reliability is .81 and .79.

In addition to 5F-WELL and AAQ II, this study used the Counseling Satisfaction Questionnaire (CSQ-8) to assess participants’ satisfaction on counselling. The purpose of CSQ-8 is to ensure the process of counselling was satisfied and benefited to participants. The CSQ-8 was developed by Larsen, Attkisson, Hargreaves, & Nguyen in 1979. It includes eight items scored on a 4-point Likert scale, with different descriptors for each response point (Kelly et al., 2018; Larsen, Attkisson, Hargreaves, & Nguyen, 1979). Matsubara et al. (2013) reported that the mean alpha coefficient of the CSQ-8 was .85. The CSQ-8 was translated into Bahasa by Ficky (2016), with alpha coefficient is .72.

**Intervention protocol**

This study used a pre-post-test control group design. A waiting list control group design was used to meet ethical standards. The study was conducted over six months - from participants screening to post-test. The treatment for experimental groups was conducted over a 2-month period. The pre-test and post-test were conducted in around two weeks before and after the treatment with paper and pencil based. The instrument used for pre and post-test was the 5F-WELL. The pre-test collected before pre counseling session and the post-test conducted a week...
after the end of counseling session. The counselling sessions were held in 60 to 90-minute sessions. Treatment group is divided into three small groups consisted of 9 to 10 participants. The counselling session was led and facilitated by a counsellor and three co-counsellors with a postgraduate qualification in guidance and counselling. Because the counselling session for treatment groups was finished two weeks before semester holiday, the treatment for waiting list control group was conducted after three months semester holiday.

The treatment protocol was developed based on six ACT core processes and adapted from ACT manual developed by Oliver, Morris, Johns, and Byrne (2011). The protocol was to enhance wellness and its second order factor which were reviewed by four experts in psychology and counselling. These six core processes were divided into 10 sessions. The first two sessions were focused on exploration on acceptance of wellness and each factor. These sessions facilitated students’ development of their capacity to be active and aware of private events without unnecessary attempts to change the situation (Hayes et al., 2006; Hayes et al., 2012). Students need to openly accept private events regarding their wellness profile. They were encouraged to talk openly about their concerns to enhance all factors of self (coping self, creative self, social self, essential self, and physical self) to understand these concepts.

The third to fifth sessions were focused on cognitive diffusion, being present and self as context. “cognitive diffusion” was employed to encourage students to identify and separate thoughts and private events from the self (Hayes et al., 2006). Metaphors and experiential exercises were used to encourage cognitive diffusion. Students were encouraged to identify their private events and their impact on their emotions, physical sensations, and behaviors. Metaphors and experiential exercises that were used were chosen based on suitability for the Indonesian context, such as "si kancil," “don’t think about ice cream,” and “hand as thought” (Stoddard & Afari, 2014). “Being present” was aimed to evaluate the attainment of the capacity to have non-judgmental contact with psychological events. The concept of being present means that students had to be aware of present moments without confusing them with future or past events (Hayes et al., 2006). Being present was facilitated with mindfulness exercises, such as "leaves on a stream," “mindfulness meditation,” “mindful movement,” and “self-compassion.” The “self as context.” This phase was achieved through experiential exercises and metaphors. These sessions were aimed to facilitate the improvement of coping self, creative self, social self, physical self, and essential self.

The sixth to ten sessions involved “value clarification” and “committed action”. In value clarification, students were encouraged to identify their values across different life domains (e.g., academic, social, spiritual, and physical). In the “committed action,” students planned their wellness improvement based on values. In these session students were facilitated to plan and implement their value-based action in the daily life.
3. Results

The participants of this study were 58 first-year students. The ratio between female and male was an imbalance; the female was outnumbered, male participant. The detail of the participant’s characteristic was in Table 1.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>31</td>
</tr>
<tr>
<td>19</td>
<td>27</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>56</td>
</tr>
<tr>
<td>Male</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
</tr>
</tbody>
</table>

To examine the effect of the intervention on the indivisible self model of wellness, analysis of covariance (ANCOVA) was conducted using baseline psychological flexibility scores as covariates for each post-test score. The ANCOVA employed to determine the differences in mean score between treatment and control group (Rutherford, 2011). Keselman et al. (1998) argued that ANCOVA in experimental studies minimize the error variance, resulting in increased statistical power and greater precision in the estimation of group effects. In this case, the psychological flexibility was used to control the treatment result.

The results indicated that ACT significantly affected wellness (F=1325.559; p<0.005). Participating students’ total wellness was significantly improved after receiving the ACT intervention. Significant improvement was also seen in the second-order wellness factors: creative self (F=385.656; p<0.005); coping self (F=347.546; p<0.005); social self (F=317.291; p<0.005); essential self (F=665.231; p<0.005); and physical self (F=74.365; p<0.005). Contextual variables (F=355.765; p>0.005) and life satisfaction (F=56.647; p<0.005) also showed significant improvement after ACT (Table 1).

<table>
<thead>
<tr>
<th>Indivisible Self of Wellness Factors</th>
<th>Control Group</th>
<th>Experimental Group</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test Mean (SD)</td>
<td>Post-test Mean (SD)</td>
<td>T test P value</td>
</tr>
<tr>
<td>Total Wellness</td>
<td>45.72 (3.13)</td>
<td>48.45 (3.04)</td>
<td>3.04</td>
</tr>
<tr>
<td>Creative Self</td>
<td>44.41 (5.78)</td>
<td>49.05 (3.75)</td>
<td>3.75</td>
</tr>
<tr>
<td>Coping Self</td>
<td>4.53 (7.91)</td>
<td>5.96 (4.69)</td>
<td>4.69</td>
</tr>
</tbody>
</table>
The pre-test results showed that the means score of students' wellness both experimental and control groups were lower than the mean score of Asian population (M=45.72 (control group) and 41.8 (experimental group) vs. M=69). The Asian population means score were developed by Mind Garden (Myers & Sweeney, 2005). After treatment, there was a considerable increase in the wellness score of those in the experimental group (M=41.8 vs. M=84.57), whereas no such increase was seen in the control group (M=45.72 vs M=48.45). Table 1 presents the differences in wellness total and second-order factor scores between pre- and post-test in the experimental and control groups. In the control group, the mean pre- and post-test total scores were M=45.72 and M=48.45, respectively. In the experimental group, the mean pre- and post-test total scores were M=41.8 and M=84.57, respectively. There were also differences in the mean scores of the control and experimental groups in the wellness factors. The mean essential-self score showed a considerable increase in the experimental group (from 32.97 to 90.03), followed by social-self (from 35.56 to 89.75); however, coping-self had the smallest increase (from 51.22 to 80.76).

**Table 3.** Wellness scores of the control and experimental groups.

<table>
<thead>
<tr>
<th>Indivisible Self Model of Wellness Factors</th>
<th>Creative Self</th>
<th>Indivisible Self Model of Wellness Sub Factors</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pretest Mean SD</td>
<td>Posttest Mean SD</td>
<td>Pretest Mean SD</td>
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<tr>
<td></td>
<td></td>
<td>45.51</td>
<td>50.68</td>
<td>40.34</td>
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<td></td>
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<td>8.48</td>
<td>11.07</td>
<td>9.44</td>
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<td></td>
<td></td>
<td>41.81</td>
<td>46.12</td>
<td>39.87</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.48</td>
<td>11.74</td>
<td>11.86</td>
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<td></td>
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<td>46.26</td>
<td>49.13</td>
<td>41.95</td>
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<tr>
<td></td>
<td></td>
<td>9.07</td>
<td>10.28</td>
<td>8.17</td>
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<td></td>
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<td>43.44</td>
<td>46.89</td>
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<td>7.57</td>
<td>10.38</td>
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<td></td>
<td></td>
<td>45.47</td>
<td>52.58</td>
<td>46.76</td>
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<tr>
<td></td>
<td></td>
<td>9.86</td>
<td>12.55</td>
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</tbody>
</table>
Table 2 shows the differences between the sub-factors of the indivisible self model of wellness. Spirituality had the greatest increase in wellness score, from 30.86 to 92.06. This was followed by self-worth (from 30.81 to 91.81), and institutional context (from 32.11 to 90.51). The smallest improvements were in nutrition (from 45.43 to 77.75) and control (from 41.95 to 75).

Counselling satisfaction (as measured by the CSQ-8) indicated that most participants were satisfied with the counselling (M=28.18, 88.07%). It can be concluded that group counselling based on ACT offered benefits and had meaningful results for participating students.
4. Discussions

Entering higher education requires a psychological capacity to cope with the demands and challenges of university life. Wellness is a key aspect of first-year students’ psychological capacity to adapt to transitional tasks. Therefore, this study aimed to examine the efficacy of ACT in enhancing wellness. The analysis of descriptive data showed differences between participants in the experimental and control groups. Participants in this study had a lower mean total wellness score compared with the mean for the Asian norm, as established by Mind Garden (Myers & Sweeney, 2005). This was also evident in the second-order wellness factors, where participants’ mean scores were mostly below Asian norms, except for social-self and essential-self. This contradictory result was also found by Ballentine (2010) in his research involving colleges in the southeastern region of the US.

Similar results also appeared for the third-order factors of wellness. Scores for most third-order factors were below Asian norms. The greatest differences from Asian norms in the third-order factors were for self-care, love, self-worth, friendship, spirituality, gender identity, emotion, work, and institutional context. There was also some contradiction between our results and Asian norms for friendship, love, spirituality, self-care, and self-worth (Myers & Sweeney, 2014). However, the lower scores for the love and spirituality factors were consistent with characteristics of first-year students as shown in previous studies (LaFountaine, Neisen, & Larsen, 2007; Wahyuni, Nurihsan, & Yusuf, 2018).

As emerging adults, first-year students commonly explore their identity, including their spiritual identity. With the development of their capacity for abstract reasoning, students may question their values, including spirituality, gender, and spiritual identity. They are also likely to develop initial resolutions on themselves in terms of love and social networking (Arnett, 2006). In this process, students may face uncertainty in their identity, which may affect their wellness (Arnett, 2006).

The present study showed that the total wellness scores of participants in the experimental group significantly improved after the ACT intervention. This suggests that ACT was effective in enhancing student wellness. The efficacy of ACT in enhancing wellness and wellbeing has been reported in many previous studies (Danitz & Orsillo, 2014; Kusumawardhani, 2012).

Improvement in students’ wellness scores after ACT may lead to improvement of their mental and psychological health (Smith, Robinson, & Young, 2007), positive motivation, and success in education and relationships (Levin, Pistorello, Seeley, & Hayes, 2014; Muto et al., 2011). Results showing improvement in positive motivation and success in education and relationships have similarities with the second-order wellness factors of coping-self, creative-self, and social self. Therefore, the results of our study are consistent with previous studies.
Although previous studies showed ACT was effective in enhancing wellness, most previous studies focused on students with psychological problems or clinical populations. ACT was effective in enhancing wellness of students with psychological stress (Versluis, Verkuil, Spinhooven, van der Ploeg, & Brosschot, 2016; Woidneck, Pratt, Gundy, Nelson, & Twohig, 2012), dating break-up (Kusumawardhani, 2012), anxiety and depression (Danitz & Orsillo, 2014; Forman, Chapman, et al., 2012; Smith, 2017), emotional eating (Hill, Masuda, Melcher, Morgan, & Twohig, 2015; Juarascio et al., 2013), stigma and prejudice (Masuda, Hayes, et al., 2009), smoking cessation (Gifford et al., 2011; Singh, Starkey, & Sargisson, 2017), and academic procrastination (Scent & Boes, 2014; Wang et al., 2017).

On the contrary, this study focused on non-clinical population which highlighted the enhancement of psychological strength – wellness. Non clinical population slightly disregarded because they were seen as “no problems population”. The population also the larger population within the university. However, they still need facilitation to enhance their psychological capacity. The six core processes of ACT facilitates enhancement of wellness. In non-clinical population, wellness would facilitate to have better capacity in adapting to academic, social and developmental tasks. Furthermore, higher score of wellness represents the capacity to cope with hardships, to have social support, physically and spiritually healthy. Therefore, they can life more fully and mentally healthy (Myers & Sweeney, 2004).

The present study enriches the evidence from previous studies on the application of ACT for a non-clinical university-based population in the Indonesian context. The results of this study also contribute to providing evidence for mental health prevention and promotion (e.g., wellness promotion), and other psychological strengths.

Application of ACT in Indonesia is still limited. ACT interventions were implemented to support coping with mental health problems, such as dating break-up (Kusumawardhani, 2012), violent behavior (Sulistiowati, Keliat, & Wardani, 2014), anxiety (Sari & Wiryo Nuryono), and sensory perception disorder (Irawan, 2016). However, only two published studies reported on the improvement of positive qualities; namely, self-acceptance of convicted criminals (Sukasti, 2017) and quality of life among patients with cancer (Suhardin, Kusnanto, & Krisnana, 2016).

Several factors contributed to the significant results for wellness enhancement. The first was students' willingness and commitment to participate in the ACT sessions. This is likely to have made a considerable contribution to the improvement of total wellness and associated factors. Students' willingness indicated their autonomy to take action, which is an important factor in the success of counselling (Michalak, Klapheck, & Kosfelder, 2004; Ryan, Lynch, Vansteenkiste, & Deci, 2011). The commitment to contribute to group counselling is recognized as a predictor of counselling results (Kessler et al., 2009). In the trans-theoretical theory
paradigm, when students commit to participating in counselling, they prepare and are ready to take action and make an effort to modify their thinking and behavior (Prochaska & DiClemente, 1992; Prochaska et al., 2012). Students’ willingness to participate enabled them to be more open to challenging themselves and developing realistic solutions (Bieling, McCabe, & Antony, 2006).

The second factor that contributed to the counselling results was social support. Social support is recognized as a significant contributor to successful group counselling. Participants receive support from other participants and progress at the same pace regarding their efforts to develop their wellness (Corey, 2012; Prochaska & DiClemente, 1992). Therefore, each participant could challenge themselves to enhance all factors of the indivisible self model of wellness.

In this study, ACT techniques made a considerable contribution to enhancing wellness. Students were encouraged to face their worries and challenges, self-worth, realistic beliefs, emotion, and stress through experiential exercises and metaphors. Metaphors are used in counselling and are considered a useful technique to improve attitudes (Sopory & Dillard, 2002), possibility to take action, and solve problems (Bränström, Duncan, & Moskowitz, 2011). Participating students could change their thinking and perspectives about themselves and their private events, and develop the courage to act to improve their wellness. Moreover, the enhancement of the indivisible self model of wellness was also facilitated by mindfulness. Mindfulness is considered a useful technique to regulate emotion (Farb et al., 2010), improve positive thinking (Bränström et al., 2011) and capacity for attention, manage negative thinking, and develop the capacity to be in the present (Lutz, Slagter, Dunne, & Davidson, 2008; Ramel, Goldin, Carmona, & McQuaid, 2004). In general, metaphors and mindfulness are adequate to promote sub-factors of the indivisible self model of wellness. Mindfulness is also a predictor of autonomous action and emotional wellbeing (Brown & Ryan, 2003).

This study had some limitations. First, in this present study, we focused primarily on the effectiveness of ACT in enhancing the wellness of the first-year student in one faculty. The accessible population of this study was relatively small. Future investigation should include a broader age range (e.g., sophomore, junior and senior years) and larger number of population. Second, the experimental design was to evaluate a mode of ACT treatment. It would be better if the future research could compare more than one counseling approach or modes of delivery (online vs face to face; individual vs group counseling) and different characteristic of samples. Third, the study was conducted during the second semester which interrupted by fasting month. As a consequence, the semester holiday was 3 weeks faster and longer than usual. This time period was insufficient to conduct treatment for the control group consecutively. Fourth, no follow-up effect was examined. Subsequent research could track long-term effects to explore specific treatment mechanisms.
5. Conclusions

This study concludes that an ACT intervention among first-year university students shows promising results. The findings demonstrate that ACT is a feasible method to enhance first-year students’ total wellness as well as the indivisible self model of wellness. The effectiveness of ACT implemented within larger Indonesian populations and different modes of delivery need to be further investigated.

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Conflict of interests

I hereby declare that there are no potential conflicts of interest associated with this publication, and that any financial support has been noted in the Acknowledgment section.

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Articles Section


Effectiveness of acceptance and commitment therapy to enhance students’ wellness


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A PILOT STUDY TO COMPARE COGNITIVE BEHAVIORAL THERAPY WITH VIRTUAL REALITY VS. STANDARD COGNITIVE BEHAVIORAL THERAPY FOR PATIENTS WHO SUFFER FROM CERVICAL CANCER

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Abstract

Besides physical symptoms, literature suggests that cancer patients often experience comorbid anxiety, depression, and a low quality of life (Asmundson & Katz, 2009), which may impede medical treatment (Brennan, 2011). Individual cognitive behavioral therapy (CBT) proved to be efficient and cost-effective in reducing depression, anxiety, cancer side effects, and in improving quality of life (Osborn, Demoncada, & Feuerstein, 2006; Montgomery et al., 2009). Moreover, virtual reality (VR) is a well-accepted tool for delivering specific components of CBT, such as relaxation (Anderson et al., 2017). The present study aims to compare standard CBT for cancer patients with CBT VR in a sample of patients who followed cervical cancer surgery. In this group, VR was used as an alternative for imagery. Our results showed no difference between groups. However, taken together, there are significant differences from pre to post intervention on pain catastrophizing, anxiety, and depressive symptoms. The possible implications of the present study are discussed.

Keywords: CBT, VR, pain catastrophizing, psychopathology

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Compliance with Ethical Standards:

Funding: There are no sources of support that require acknowledgement.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

Ethical approval: This article does not contain any studies with animals performed by the author.
Introduction

People affected by cancer frequently report heightened psychological distress that for some persists for many years (Chambers et al., 2018). Both depression and anxiety are more common in oncology patients than in the general population (Gold et al., 2016). Approximately 16-25% of newly patients diagnosed with cancer experience depression or an adjustment disorder, while both anxiety and depression were associated to overall health (Asmundson & Katz, 2009).

Literature defined different emotional and sensorial components of a painful condition as pain related outcomes (Dworkin et al., 2005). As a consequence, anxiety, depression, quality of life, pain intensity, and pain tolerance were extensively investigated in a broad category of medical conditions (Fayers & Machin, 2013). Since these conditions may share several common causes (Axelson & Birmaher, 2001), the level of comorbidity is extremely high (Angold, Costello, & Erkanli, 1999). In most of the cancer patients, comorbid anxiety and depression have been found from the time of diagnosis and early treatment (Epping-Jordan et al., 1999). As literature emphasized, clinical treatments and medical recovery are impeded by these emotional difficulties that patients often experience (Brennan, 2011). Specifically, dysfunctional emotions are associated with non-adherence to treatment recommendations, increased time in the hospital, a poorer health prognosis, increased mortality, and impaired physical, social and family functioning (Gold et al., 2016). Anxiety and depression influence also sensorial aspects of pain, such as pain intensity and pain tolerance (Wiech & Tracey, 2009). In addition, anxiety and depression respond to similar interventions. Focusing on psychological treatment, there is evidence that cognitive behavioral therapy can produce significant symptom relief in mild to moderately impaired samples (Compton et al., 2004), and many of the CBT techniques used to treat the two conditions are similar (Weersing et al., 2008).

CBT for pain related outcomes

It is important to target the mechanisms of psychopathology in order to improve patient’s well-being and medical treatment outcomes (Schumann et al., 2014), and it is now well acknowledged that psychological intervention is an essential component in cancer care (Holland, Watson, & Dunn, 2011; Montgomery et al., 2009). CBT is considered an effective first-line treatment for diagnosable anxiety and depressive disorders in the general population (David et al., 2008; Greer et al., 2010). Specifically, in patients diagnosed with cancer, individual CBT sessions proved to be efficient and cost-effective in managing cancer side effects, and in improving quality of life by reducing depression and anxiety symptoms (Osborn, Demoncada, & Feuerstein, 2006).

CBT assumes that when encountering a negative activating event people may respond in two possible ways: functional or dysfunctional (David, Lynn, &
Ellis, 2009; David et al., 2008). The cognitive-behavioral approach is based on the assumption that a specific central or core feature is responsible for the observed symptoms and behavior patterns experienced, and once the central feature is identified, targeted in treatment and changed, the resulting maladaptive thoughts, symptoms, and behaviors will also change (Bond & Dryden, 2005). Beside this, CBT in oncological settings typically includes problem solving strategies (Greer et al., 2010).

As literature suggested, individual thoughts and believes about the symptom's meaning, controllability, and consequences influence how symptoms are experienced (David, Lynn, & Ellis, 2009; Kwekkeboom et al., 2010). Specifically, during CBT intervention, participants are taught to understand how their thoughts influence their feelings and behavior, to recognize and acknowledge when this is occurring, and to use cognitive strategies and coping skills to change their thoughts and behaviors (Arch & Crasche, 2008). As applied to symptom management in cancer patients, CBT interventions focus on helping participants to identify and change maladaptive cognitions about their symptoms and use various cognitive and behavioral coping strategies (Kwekkeboom et al., 2010). Imagery is used for relaxation in most of the CBT protocols (Tatrow & Montgomery, 2006), while catastrophic beliefs about cancer symptoms are the main target in most of the interventions (Zaza & Baine, 2002), due to the significant impact that it has on pain and pain related emotional outcomes (Sullivan et al., 2001).

CBT is usually delivered over several weeks (Bond & Dryden, 2004) and homework assignments to practice what has been learned outside of the training sessions is a well-known part of the therapy protocols (Newmann, 2013). Change can occur in the short term as a result of learning these new thoughts, behaviors, and new coping skills (such as assertiveness, relaxation, or self-talk) and may be maintained over the long term as these newly acquired responses generalize across situations and time (Bond & Dryden, 2004). Also, there are important benefits associated with the use of psychological interventions in various settings. Individual psychotherapy and group interventions in cancer patients are in general beneficial in terms of psychopathology reduction and symptom management (Hewitt, Herdman & Holland, 2004).

Virtual reality

Virtual reality (VR) technologies are growing rapidly, with many new applications in the areas of psychology and healthcare (Anderson et al., 2017). In particular, it was used for treating several psychological disorders (Botella et al., 2013), as well as in the clarification of the mechanisms of change involved in evidence-based treatments (David, Matu, & David, 2013). VR is considered a powerful distracter: it provides a high degree of immersion to the user and by directing the individual’s attention away from the real world, and into the virtual environment, it may facilitate relaxation (Herrero et al., 2014). VR distraction is a more appropriate procedure for patients undergoing a painful intervention and has been successfully used in the treatment of acute pain associated with medical
procedures (Hoffman et al., 2011). Beside distraction, VR may be useful in promoting positive emotions, such as relaxation (Botella et al., 2010, Anderson et al., 2017). In chronic pain, a complex condition wherein the patient is experiencing constant pain, distraction may not be effective (Botella et al., 2013). In these cases, relaxation is a much-used technique (Baird & Sands, 2004; Carroll & Seers, 1998).

Natural scenes showed improved relaxation over the control scenes (Anderson et al., 2017), while stress recovery can be facilitated by the sounds of nature in virtual green environment in a laboratory setting (Annerstedt et al., 2013). Moreover, the effect of positive emotions in the treatment of mental and health problems and the use of technology in promoting well-being is a matter of interest in the current research (Riva et al., 2012; Or & Karsh, 2009; David, Matu, & David, 2013). Also, compared with the traditional component of relaxation in CBT standard for cancer patients, namely imagery, VR is expected to have superior effects, since the level of immersion has proved to be higher (Baños, et al., 2005). In terms of patients’ attitude toward the procedure, it has high levels of acceptability (Botella et al., 2016; Herrero et al., 2014). Nevertheless, relaxation delivered by VR may help patients in the regulation of negative emotions, in increasing of coping resources, and in promoting resilience (Herrero et al., 2014).

The present study

It is well known that CBT demonstrated to be effective when compared with no treatment, in chronic pain patients (Morley, 2011). Also, VR interventions are efficient ways of treatment (Li et al., 2011; Botella et al., 2013). While CBT is the dominant intervention approach in a wide range of psychological conditions, VR exposure is the best approach to deliver the relaxation component, with significant effects (see Herrero, 2014). However, little are known on whether CBT may significantly improve by using VR to deliver an important component of treatment. Therefore, we aim to compare the effectiveness of CBT VR with standard CBT in reducing acute cancer-related anxiety and depressive symptoms. We expect that participants who receive CBT VR would have lower anxiety and depression levels. As a consequence, we expect a lower level of pain intensity, a higher level of pain tolerance, and increased quality of life in this group.

Methods

Participants

A number of twenty participants from Oncological Hospital "Ion Chiricuță" of Cluj-Napoca, Romania were included in the study. Patients diagnosed with cervical cancer were approached by a research assistant to participate to four psychotherapy sessions in order to reduce dysfunctional adjustment to cancer. All participants completed an informed consent. The study was approved by the Ethical Commission of the hospital.
Procedure

Participants were non-randomly assigned in one of the two groups to receive either CBT VT or standard CBT. Cervical cancer patients who have, or are at risk of having elevated anxiety or depression were included in the study. Twenty participants were enrolled; ten participants were assigned to each group. Participants were not aware of their assignment until their first session. Patients were administered the primary outcome measure and completed a second assessment after completion of therapy session. Participants who dropped out after starting the treatment were requested to complete a final assessment.

The protocol supposed both groups to follow 15 minutes of relaxation via imagery or in VR. During imagery, we asked participants to create specific mental images within a natural context, with the intent of bringing positive physical or emotional responses. As literature suggest, VR exposure to relaxing virtual natural contexts (beach, forest, park, etc.) and imagery are similar in terms of practice. Both interventions focus on the creation of mental representations, through recall of memories or creative imagination that change the symptom experience (Marks, 1973). Therapy sessions were delivered by psychotherapists trained in cognitive-behavioral framework.

The VR system is an adaptive display that can include visual cues to focus patients’ attention on a component promoting relaxation and to train patients to pay attention to stimuli not related to pain. These components constitute an adjunct to a broader CBT program that includes education, cognitive therapy, active coping, social skills training, and relapse prevention.

The adapted intervention comprised four 60-minute individual sessions delivered over 1 month and focused on addressing the cognitive and behavioral factors (See Greer et al., 2010). The sessions were modeled after traditional treatment protocols.

Measures

Pain catastrophizing

The Pain Catastrophizing Scale (PCS; Sullivan, Bishop, & Pivik, 1995) is a 13-item measure of catastrophic thinking associated with pain. Participants rate how frequently they experience each of 13 thoughts or feelings when they are in pain. Ratings are made on 5-point scales with the end points 0 = not at all and 4 = all the time. The PCS yields a total score and 3 subscale scores assessing rumination, magnification, and helplessness. The PCS subscales have been shown to have adequate to high internal consistency (Cronbach alphas: total PCS = 0.87, rumination = 0.87, magnification = 0.66, and helplessness = 0.78).

Anxiety and depression

Anxiety and depression were measured using the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983). The HADS is a brief instrument for measuring psychological distress in cancer patients. It consists of 14 items and contains two subscales: anxiety and depression. Each item is rated on a four-point scale, giving maximum scores of 21 for both the subscales.
**Quality of life**

The Functional Assessment of Cancer Therapy- General Scale (FACT-GP; Cella, Tulsky, Gray, 1993). This well-validated scale was used to assess quality of life at each assessment.

**Pain outcomes: pain intensity and pain tolerance**

Pain intensity and pain tolerance were assessed using a standard 10-cm visual analog scale (VAS). The end points for assessing pain intensity were labeled "no pain" and "pain as bad as it could be", while for pain tolerance they were labeled as "low tolerance" and "very high tolerance".

**CBT protocol**

The protocol developed by Greer et al., (2010) was adapted and used as described:

**Session 1**
- Review cognitive-behavioral therapy model of dysfunctional anxiety and depression within context of cancer
- Discuss associations between anxiety/ depression, physiologic stress-response, and cancer-related symptoms and treatment side effects
- Introduce guided imagery / VR
- Establish treatment goals

**Session 2**
- Identify automatic thoughts related to having advanced cancer
- Examine evidence to differentiate realistic from unrealistic thoughts
- Gather additional data from credible sources if needed
- Utilize cognitive restructuring skills for cognitive errors
- Apply either problem-focused or acceptance-based/adaptive, emotion-focused strategies
- Relaxation- guided imagery / VR

**Session 3**
- Identify automatic thoughts related to having advanced cancer
- Examine evidence to differentiate realistic from unrealistic thoughts
- Gather additional data from credible sources if needed
- Utilize cognitive restructuring skills for cognitive errors
- Apply either problem-focused or acceptance-based/adaptive, emotion-focused strategies for realistic concerns
- Relaxation- guided imagery / VR

**Session 4**
- Assess and prioritize daily activities
- Categorize days by functional capacity
- Plan and pace activity schedule by time rather than by task
- Relaxation- guided imagery / VR
Statistical analyses

Standard univariate (means and standard deviations) were calculated to summarize outcome measures. Parametrical analyses were used.

Results

Descriptive statistics

The means and standard deviations of the participants’ scores of the variables chosen for this investigation at the pre-test and post-test were calculated (See Table 1).

Table 1. Descriptive statistics.

<table>
<thead>
<tr>
<th>Time</th>
<th>Pain catastrophizing</th>
<th>Anxiety</th>
<th>Depression</th>
<th>Quality of life</th>
<th>Pain Intensity</th>
<th>Pain Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M SD</td>
<td>M SD</td>
<td>M SD</td>
<td>M SD</td>
<td>M SD</td>
<td>M SD</td>
</tr>
<tr>
<td>Pre-Intervention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBT VR</td>
<td>19.1 11.1</td>
<td>5.4 3.8</td>
<td>5.3 4.34</td>
<td>48.49 6.1</td>
<td>2.08 0.37</td>
<td>2.18 0.68</td>
</tr>
<tr>
<td>CBT Standard</td>
<td>16.8 10.99</td>
<td>4.6 2.7</td>
<td>4.5 5.74</td>
<td>50.75 0.71</td>
<td>2.08 0.37</td>
<td>2.4 0.49</td>
</tr>
<tr>
<td>Post-Intervention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBT VR</td>
<td>14.38 12.61</td>
<td>3.46 2.38</td>
<td>3.78 2.31</td>
<td>65.64 4.78</td>
<td>1.45 0.68</td>
<td>2.01 0.94</td>
</tr>
<tr>
<td>CBT Standard</td>
<td>11.9 11.18</td>
<td>3.98 0.44</td>
<td>4.28 1.5</td>
<td>65.83 4.97</td>
<td>1.66 0.62</td>
<td>2.14 0.73</td>
</tr>
</tbody>
</table>

Group comparisons

Parametrical analyses were performed to investigate whether there are differences between the scores from pre-treatment to post-treatment on our main outcomes. No significant differences were observed between the two groups (See Table 2).

Table 2. Group comparisons on pre and post intervention.

<table>
<thead>
<tr>
<th>Time</th>
<th>Pain catastrophizing</th>
<th>Anxiety</th>
<th>Depression</th>
<th>Quality of life</th>
<th>Pain Intensity</th>
<th>Pain Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t p</td>
<td>t p</td>
<td>t p</td>
<td>t p</td>
<td>t p</td>
<td>t p</td>
</tr>
<tr>
<td>Pre-Intervention</td>
<td>0.46 0.64</td>
<td>0.44 0.66</td>
<td>0.35 0.72</td>
<td>-1.16 0.26</td>
<td>-0.25 0.8</td>
<td>-0.83 0.41</td>
</tr>
<tr>
<td>Post-Intervention</td>
<td>0.46 0.64</td>
<td>-0.68 0.5</td>
<td>-0.57 0.57</td>
<td>-0.86 0.93</td>
<td>-0.71 0.48</td>
<td>-0.33 0.73</td>
</tr>
</tbody>
</table>

Overall comparisons

We compared the scores from pre-to post intervention, regardless of the group allocated. Paired-samples t test was performed. We found significant differences on quality of life and pain intensity, p < .05 (See Table 3).
Discussions

Our study aimed to change patients' thoughts as a way to influence their feelings and behaviors, by helping patients to recognize and subsequently control their response to cancer symptoms. Since the threat is real, the task of making cancer patients think of their condition from a more rational approach is challenging (Greer et al., 2010). As a threatening condition, cervical cancer may activate dysfunctional pattern of thinking (see Ingram & Luxton, 2005; Beck, Rush, Shaw & Emery, 1979). This is one of the few studies comparing CBT VR with CBT Standard as an alternative way to induce relaxation in the psychological treatment of cervical cancer. The protocol was adapted from Greer et al., (2010) and included elements of CBT. The intervention focused mainly on cognitive restructuring of catastrophic interpretations of sensations associated with cancer, and also included behavioral activation, self-management, and relaxation training.

Our results indicated that there are no significant differences between the groups. However, a decreasing trend may be observed from pre-to post intervention in both groups. Still, the significance level was not attained. As previous literature suggested, pilot studies are usually not powered to detect meaningful differences in clinically important endpoints and may be biased because of the limited sample sizes (Thabane et al., 2010). Therefore, if not used cautiously, results of pilot studies can potentially mislead further decisions (Kraemer et al., 2006). However, when we conducted comparisons form pre-to post intervention, regardless of the group, we found significant differences on quality of life and pain intensity. It is well known that numerous investigations examining the utility of various psychological interventions (e.g., group support, individual psychotherapy, psychoeducation, relaxation training) were successfully in treating psychological distress, manage pain, improve quality of life, and even extend survival in patients with cancer (Greer et al., 2010).

In both groups, cognitive restructuring component was used, which consists of challenging the known cognitive distortions and changing them (Dryden &David, 2008). Setting goals related to activities that are significant for the patients and

### Table 3. Overall comparisons from pre to post intervention.

<table>
<thead>
<tr>
<th>Measures</th>
<th>M</th>
<th>SD</th>
<th>95% Confidence Interval of the Difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
<td>Upper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain Catastrophizing</td>
<td>4.81</td>
<td>17.41</td>
<td>-3.34</td>
<td>12.96</td>
<td>1.24</td>
<td>19.00</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1.28</td>
<td>4.23</td>
<td>-0.70</td>
<td>3.26</td>
<td>1.35</td>
<td>19.00</td>
</tr>
<tr>
<td>Depression</td>
<td>0.87</td>
<td>4.61</td>
<td>-1.29</td>
<td>3.03</td>
<td>0.84</td>
<td>19.00</td>
</tr>
<tr>
<td>Quality of Life</td>
<td>-16.12</td>
<td>7.44</td>
<td>-19.60</td>
<td>-12.64</td>
<td>-9.69</td>
<td>19.00</td>
</tr>
<tr>
<td>Pain Intensity</td>
<td>0.48</td>
<td>0.93</td>
<td>0.04</td>
<td>0.91</td>
<td>2.30</td>
<td>19.00</td>
</tr>
<tr>
<td>Pain Tolerance</td>
<td>0.22</td>
<td>1.02</td>
<td>-0.27</td>
<td>0.69</td>
<td>0.94</td>
<td>19.00</td>
</tr>
</tbody>
</table>
getting patients to perform those activities progressively, balancing the period of rest and activity is the component of behavioral change that was delivered in the last session (Greer et al., 2010). Since factors such as anxiety and the meaning of the cancer symptoms may intensify how the physical symptoms are perceived and experienced (So et al., 2009), relaxation can help to counteract the feelings such as low mood, fear, pain, fatigue, willingness to perform the activities, low motivation and a poor sense of self-efficacy (Herrero et al., 2014). By restructuring how the symptoms are interpreted, interventions may enhance coping and diminish dysfunctional emotions (Dryden & David, 2008).

Also, previous studies indicate that imagery interventions demonstrated positive effects on relaxation induction and reduction of cancer side effects (Pachman et al., 2012). However, in terms of acceptance and immersion, VR is considered to be superior (See Botella et al., 2016). Although our results do not emphasize significant differences between CBT VR and CBT Standard (with imagery), several explanations are based on the non-randomized design of the present study and on the low number of subjects enrolled. However, considering the literature which indicates that often the emphasis of a pilot study should address feasibility (Thabane et al., 2010), our data show that VR procedure for the induction of relaxation together with CBT sessions is acceptable and useful in case of cervical cancer patients, with lower dropout rate than in the CBT standard.

**Theoretical and clinical implications**

As previously mentioned, our results shown that CBT VR had the highest number of patients who completed all the sessions. As literature indicated, VR is accepted by patients, with significant efficacy for the induction of positive emotions, such as relaxation during a painful condition (e.g. Herrero et al., 2014). Patients reported feeling better after going through the VR procedure and being more active (see also Herrero et al., 2014). As we noted previously, there were significant differences from pre to post intervention on quality of life and pain intensity on overall analysis. Considering that CBT was delivered in both groups, following the same components and structure, these results may indicate that CBT is a useful intervention for hospitalized patients with cervical cancer in reducing the level of perceived pain and in increasing quality of life. Also, as research suggest, the symptoms typically do not occur in isolation, but as combinations of two or more co-occurring symptoms that are related to each other and that are independent of other symptoms or symptom clusters (Kwekkeboom et al., 2010). In this context, CBT might act for a large category of outcomes from the spectrum of patient’s reported quality of life and emotional outcomes associated to a medical condition (Cano-Vindel et al., 2016). As Kwekkeboom et al., (2010) suggested, symptoms within the cluster may share the same etiology, while some of the symptoms may be activated by the cancer itself, whereas others are brought about by cancer treatment strategies. Identifying a tool that may help alleviate the burden of these symptoms is the focus of the recent literature on pain and emotions management (Linton, 2013;
When occurring together, the symptoms may have a greater impact on physical function, emotional distress, and overall quality of life than was previously attributed to symptoms occurring in isolation (Cleeland, et al., 2007). Therefore, a transdiagnostic perspective for symptoms within the same cluster may add significant benefits for patients (Linton, 2013).

**Limits**

The main limits of the present study are based on the low number of participants, which influenced the power of our study. Also, initial and final assessment were conducted by the psychotherapist that delivered the therapy sessions, which may have biased the answers. Regarding the time for exposure in VR, it varied from 5 to 15 minutes due to cyber sickness declared by some participants, while in the standard CBT, imagery was delivered for 15 minutes. There is an inequivalence of time exposure which may lower the impact of results from CBT VR group. Nevertheless, due to some organizational issues and problems with VR tool, the present study was non-randomized. Therefore, the conclusions based on the present data must cautiously be interpreted.

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Risks in the Psychotherapy Process

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Abstract
Psychotherapy is effective, as demonstrated by numerous studies. However, the process of psychotherapy itself can also lead to adverse effects and includes risk factors that arise, either due to the client's external environment or due to different factors of the therapist or client in the relationship. In the study, we focus on the question how has psychotherapy changed participant's satisfaction with life. We also focus on some violations of the boundaries in the psychotherapeutic process, and review the incidence of critical events in psychotherapy. The study involved 107 participants aged 18 or more who attended or still attend psychotherapy. They completed the Effectiveness and Side Effects of Psychotherapy Questionnaire. Participants reported a change in life satisfaction in 84.1% of cases, 4.7% did not detect any change, and 11.2% reported a deterioration. We would like to encourage new studies on critical psychotherapy events, as this will make it easier to prepare psychotherapists for possible complications that can arise during the process itself and protect clients.

Keywords: psychotherapy, adverse reaction, risk factors, critical events, border violations

Introduction
Prochaska and Norcross (2003) describe psychotherapy as the deliberate use of clinical methods and interpersonal features in order to change client behavior, thinking, emotions and other personality characteristics in the direction that the client wants. Precisely because of its sensitivity, as in all areas of health and social work, quality assurance plays a leading role in psychotherapy as well. Therefore, it is necessary to ask questions about its effectiveness and potential risk factors and side effects, which may be the reason for the failure of treatment (Leitner et al., 2012).
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Lambert (1992) summarized the results of psychotherapy and the factors needed for effective therapy in four groups, namely: the characteristics of the client and his environment; common factors that include the relationship between a psychotherapist and a client; therapeutic factors, which include the therapeutic warmth, acceptance, empathy, stimulation of the therapist; psychotherapeutic techniques. Despite the fact that psychotherapeutic techniques reportedly represent only 5% of the impact, previous research of the psychotherapy process focused the most on it, while there were few studies that would evaluate both positive and negative effects and risks (Slevec, 2018). Presentations of cases are mainly focused on successful therapies, although we could learn more from therapeutic errors. In this way, future psychotherapists and even users are mislead in the opinion that every case of psychotherapeutic treatment leads to a successful conclusion (Stricker, 1995). The reasons for the unsatisfactory state of research in this area are different. Among them there is definitely insufficient conceptualization of treatment errors. In addition, clients who experience worsening are more likely to discontinue therapy. Another problem is the difficulty of distinguishing whether a deterioration has occurred due to a negative treatment process, or because of the environmental impact on the client. One of the causes of neglecting adverse reactions and risk factors is the lack of awareness on the part of psychotherapists to contribute to an unwanted treatment cycle, and therefore pay little attention to this (Jacobi, 2001).

Research shows that psychotherapeutic interventions usually have high positive effect, and yet the results of therapies vary, depending on clients and therapists. One of the worrying discoveries about the effectiveness of psychotherapy is that 5 to 10% of clients who attend psychotherapy report on the worsening effect during therapy (Slevec, 2018). In interpreting the data, however, we need to be careful, as the main cause of the deterioration is not necessarily psychotherapy (Lambert & Ogles, 2016).

Boundaries in the psychotherapeutic process are the basis of a correct therapeutic relationship (Gombač, 2014), while their disregard can be demolished by the therapist-client alliance and cause damage to the client (Pope & Keith-Spiegel, 2008). In his work, a therapist often faces dilemmas and situations that do not offer simple solutions, but the ethical code must be followed. In the early 1980s, researchers paid great attention to the issues of the boundaries in the therapeutic process. More than 1500 books, articles and dissertations were published covering the themes of borders, dual roles, attitudes, etc. (Pope & Keith-Spiegel, 2008). The question has arisen whether it is possible to determine which border crossings are therapeutically useful, which are certainly harmful and which are inevitable in different cultures or communities. The breakthrough for investigating the phenomenon was the article by Gutheil and Gabbard (1993), which provided a framework for future research, field development, and help with solving difficult decisions in the psychotherapy process. Gutheil and Gabbard (1993) systematically studied the concept of borders and border breaches in clinical practice, focusing
Articles Section

primarily on sexual abuse. They reviewed the literature on the topic and identified critical areas that include the role of time, place and space, money, gifts, services, clothing, language, self-awareness and physical contact. They noted the principles governing the relationship between borders, border crossings, border violations and sexual offenses. Sexual violations usually begin with minor violations that indicate a progressive increase in therapeutic invasion of the client's personal space with a peak in sexual intercourse. A direct transition from conversation to sexual intercourse is quite rare, and Gabbard (1989) states that the transition usually involves a change in addressing the client from the last name to the first, body contact (e.g. touch of the shoulders), meetings outside of therapeutic framework, lunches and dinners, sometimes with alcoholic beverages, watching movies or visiting social events and finally sexual intercourse. It is necessary to realize that all border crossings and violations do not lead to sexual contact. A clear breach is, among others, "influencing" the ideological beliefs of the client, which is reflected in behavior that violates the boundaries, but certainly does not lead to sexual abuse and is not harmful to the client (Gutheila & Gabbard, 1993).

Certain emotions - anger, hate, fear, sexual attraction or arousal - can cause an unhealthy feeling for the therapist. Probably precisely for this reason, research that addresses these aspects of psychotherapy is lacking, or are very few (Pope & Tabachnick, 1993). With a survey involving only the client's subjective perception of the process, we would like to encourage new studies on critical psychotherapy events, as this will make it easier to prepare future psychotherapists for possible complications that can arise during the process itself and protect clients. Increased awareness of border concepts, border crossings and border violations will improve customer support and contribute to effective risk management (Gutheila & Gabbard, 1993). In the study, we focused on some violations of the psychotherapeutic process boundary and did an overview of some incidence of critical events / situations in psychotherapy among research participants, among which we added the following points: "I concluded business with a psychotherapist or provided him with contacts for concluding them; sometimes after psychotherapy I was so distressed that I needed help; I was afraid that physical violence would occur between me and psychotherapist; and lastly: has there ever been erotic or sexual contact between you and your psychotherapist (Slevec, 2018)."

The emphasis in the study is also the assessment of clients about the effects of psychotherapy, or whether the effects of psychotherapy in Slovenia are generally assessed as positive, or clients perceive improvement in life satisfaction, are unaltered, or estimated as a deterioration in life satisfaction. Unfortunately, one of the risks of the process of psychotherapy is also a deterioration of life satisfaction. According to past research (e.g. Leinter et al. 2011), we expect 10% of participants to experience a worsening of life satisfaction. The research question therefore, in the context of the risk in the psychotherapeutic process, refers to the possibility of psychotherapy harming the participants.
Method

Participants
The study included individuals aged 18 or over who had already attended psychotherapy in their lifetime or are still attending psychotherapy. By 25 October 2017, the survey involved 399 participants, but we had to exclude 292 of them from the data analysis, as 242 simply clicked and did not answer any questions, and 50 participants answered on only a few. This is why only 107 questionnaires were used, of which 33 (30.8%) of the them were solved by men and 74 by women (69.2%). The age of participants in the study ranged from 19 to 61 years ($M = 35.8$; $SD = 10.66$).

Instruments
We used the Questionnaire Effectiveness and Side Effects of Psychotherapy (Risiken, Nebenwirkungen und Schäden durch Psychotherapie, Leitner et al., 2009), which was developed in Austria. They carried out a comprehensive study of the effects and side effects of psychotherapy between 2007 and 2012. The questionnaire was translated and examined for Slovenia by Anja Rakuša (2010), Simona Klančnik and Maja Urbanc later contributed to the completion of the questionnaire. The completion of the online questionnaire form takes about 15 minutes. It includes 5 groups of factors, namely the quality of the therapist-client relationship, the desired effect, socio-emotional change, isolation at the time of therapy, and the feeling of stress with therapy. It covers issues relating to the course of psychotherapy, the attitude of the client with the psychotherapist, the specific circumstances of psychotherapy, and the changes in the quality of life. It contains 43 questions, and the last question enables participants to provide additional information in relation to psychotherapy. The initial questions of the questionnaire include demographic information about the participants; refer to gender, age, status of relationship, employment status and the number of visits and successfully completed psychotherapies. The next set of questions include general information on the beginning, duration and end of psychotherapy, the causes of the conclusion of psychotherapy, the psychotherapy initiative, the gender of psychotherapist, the basic psychotherapeutic profession, the psychotherapeutic approach, the data on financial aspects of psychotherapy, and the frequency of visiting psychotherapy. The last set of questions covers issues related to therapy, and questions about the psychotherapist's implementation of pressure on the client to change his private and business life and the perception of the intensity of the pressure. It covers issues related to the effectiveness of psychotherapy or change in satisfaction after therapy and involves changing the client's personality and abilities and satisfaction with life, leisure, work and profession, body, sex life, economic situation, housing, relationship or single life, family life and friends circle. Participants of the survey estimate changes on the scale from -5 to +5, where -5 signifies a great deterioration, 0 means no change, and +5 is a large improvement.
The questions related to therapy also include items evaluated by participants on a scale from I completely agree – I completely disagree. They also include assessment of satisfaction with the therapist, namely: I was satisfied; I could trust; I had the feeling that my psychotherapist was the most important person in my life; I felt understood by my psychotherapist; I was scared/afraid of the reaction of my psychotherapist when I concluded psychotherapy; I had the feeling that my psychotherapist was the only person who listened to me. Questions also include items on the effects of psychotherapy, namely: I learned how to represent myself; I became more vulnerable; I became more self-confident; because of psychotherapy it is easier to get in touch with other people; I became more sensitive; I became more aggressive. There are also items related to the social environment of an individual: I was afraid that someone from my surroundings would find out that I attend psychotherapy; during the time of psychotherapy, I also received assistance and support from my social environment outside of the meetings. Psychotherapy-related issues include questions about critical events that involve: "I concluded business with a psychotherapist or provided him with contacts for concluding them; sometimes after psychotherapy I was so distressed that I needed help; I was afraid that physical violence would occur between me and psychotherapist; the question of erotic attraction to the psychotherapist and vice versa; and lastly: has there ever been erotic or sexual contact between you and your psychotherapist." The questionnaire also covers the question of the psychotherapist's use of various non-standardized methods (e.g. astrology, tarok ...). The effectiveness of psychotherapy was assessed through the construct of general satisfaction with life, which represents the average assessment of change in 11 areas of life (personality and abilities, life, leisure, work and occupation, body, sex life, economic situation, housing, relationships or single life, family life, friend circles). For the purposes of research on critical events that can arise during the psychotherapeutic process, we used data that covered the gender of the participants and questions about critical events that include the question of concluding transactions or providing contact to a psychotherapist, a question that relates to the feeling after the therapy, the question about the fear of physical violence between the client and the psychotherapist, the question of erotic attraction to the psychotherapist and vice versa, and about sexual contacts between the client and the psychotherapist.

Procedure

We selected participants with the help of company Talk Through d.o.o. and Slovenian umbrella association for psychotherapy. 42 participants were selected using the “snowball method”; 21 participants expressed a desire to solve a paper and pencil questionnaire, while the other participants answered the questionnaire online. We turned to people in the wider social environment, who firstly presented them with the purpose of the research - collecting information about the effects of psychotherapy and related factors. We have ensured the anonymity of the research, because people can be restrained from answering due to fear of prejudice of attending psychotherapy. Data were collected from May to October 2017. For the perceived
change in satisfaction in eleven areas, we created a new variable, which we called
general satisfaction with life. We checked the number of participants who perceived
deterioration, no change or improvement in general satisfaction in life. In order to
evaluate the critical events that can occur during the psychotherapeutic process, we
calculated descriptive statistics.

Results

The change with satisfaction in 11 different areas of life was evaluated by
the participants on a 11-point scale ranging between -5 and 5. If satisfaction with life
deteriorated, the degree of deterioration could be estimated from -5 (very
deteriorating) to -1 ; if they thought that it did not change, they gave a score of 0,
and from 1 to 5 (greatly improved) they evaluated the improvement. For the purposes
of further analysis, the scale was changed to the 11-point scale from 1 to 11, with
grades 1 to 5 representing a deterioration in satisfaction, 6 - no change, and 7 to 11
an improvement. In this way, three categories of changes in life satisfaction were
also identified: deterioration, no change and improvement. The average change in
all 11 areas is a change in general life satisfaction.

Table 1. Display of average grades and types of change
in individual areas of life and general life satisfaction.

<table>
<thead>
<tr>
<th>Change</th>
<th>Deterioration</th>
<th>No change</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Personality and abilities</td>
<td>107</td>
<td>8,46</td>
<td>2,151</td>
</tr>
<tr>
<td>Life</td>
<td>107</td>
<td>8,28</td>
<td>2,087</td>
</tr>
<tr>
<td>Free time</td>
<td>107</td>
<td>7,72</td>
<td>2,167</td>
</tr>
<tr>
<td>Work and profession</td>
<td>107</td>
<td>7,51</td>
<td>1,983</td>
</tr>
<tr>
<td>Body</td>
<td>107</td>
<td>7,64</td>
<td>1,977</td>
</tr>
<tr>
<td>Sex life</td>
<td>107</td>
<td>7,26</td>
<td>2,067</td>
</tr>
<tr>
<td>Economic situation</td>
<td>107</td>
<td>6,64</td>
<td>1,598</td>
</tr>
<tr>
<td>Housing situation</td>
<td>107</td>
<td>6,78</td>
<td>1,673</td>
</tr>
<tr>
<td>Relationship</td>
<td>107</td>
<td>7,85</td>
<td>2,426</td>
</tr>
<tr>
<td>Family life</td>
<td>107</td>
<td>7,78</td>
<td>2,066</td>
</tr>
<tr>
<td>Friends circle</td>
<td>107</td>
<td>7,41</td>
<td>2,087</td>
</tr>
<tr>
<td>General satisfaction with life</td>
<td>107</td>
<td>7,58</td>
<td>2,03</td>
</tr>
</tbody>
</table>
The participants answered questions related to critical situations that can occur during or after psychotherapy. The tables below show the choices of possible answers - never, once or more, that relate to the claims: "I have already done business with a psychotherapist or provided contacts for their inference"; "After a hour of psychotherapy, I was so upset that I needed help" and "I was afraid that physical violence would occur between us".

**Table 2.** Frequency of occurrence of listed events / situations.

<table>
<thead>
<tr>
<th>Event</th>
<th>Never</th>
<th>Once</th>
<th>More than once</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have already done business with a psychotherapist or provided</td>
<td>104</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>contacts for their inference.</td>
<td>97,2%</td>
<td>2,8%</td>
<td>0%</td>
</tr>
<tr>
<td>After a hour of psychotherapy, I was so upset that I needed help.</td>
<td>88</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>82,2%</td>
<td>9,3%</td>
<td>8,4%</td>
</tr>
<tr>
<td>I was afraid that physical violence would occur between us.</td>
<td>102</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>95,3%</td>
<td>2,8%</td>
<td>1,9%</td>
</tr>
</tbody>
</table>

The last set of questions related to the erotic appeal between the psychotherapist and the client, and whether there has ever been physical or erotic contact between them. The table below shows the results of the answers to the questions if the client felt the erotic appeal to the therapist and vice versa; and lastly: has there ever been erotic or sexual contact between them and their psychotherapist. In one case came, with the consent of the participant, to the erotic or sexual contact.

**Table 3.** Answers to questions about erotic attraction.

<table>
<thead>
<tr>
<th>Question</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you ever felt the erotic appeal to the therapist?</td>
<td>95</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>88,8%</td>
<td>11,2%</td>
</tr>
<tr>
<td>Did you feel that your therapist was attracted to you?</td>
<td>100</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>93,5%</td>
<td>6,5%</td>
</tr>
</tbody>
</table>

Six participants answered confirmative on both issues, which deal with erotic appeal - whether they were attracted by a psychotherapist and whether they think they attracted him. Six responded that only they felt the attraction and one answered that only the psychotherapist felt attracted to him.
Discussion

Our aim was to highlight the potential risk factors of the psychotherapeutic process, within the framework of the perceived subjective deterioration of client satisfaction with life, as well as the incidence of some critical events that may occur during the psychotherapy process. It is definitely expected that during and after the psychotherapy process the satisfaction with life will improve. For this purpose, we asked participants about changes in satisfaction in different areas of life, and from the obtained data, we calculated overall satisfaction with life. It turned out that the change on average in all areas was more positive than negative. The biggest positive change has been shown in the areas of personality and competence and satisfaction with life. The smallest change was detected in housing and economic situation, as more than half of the participants reported that there was no change in these two areas. This information is not surprising, since housing and economic situation are environmental factors that are harder to influence; In addition, clients are more likely to visit psychotherapy due to internal factors. The change in general life satisfaction was also positive - in 84.1% of individuals it improved, at 11.2% it deteriorated, and 4.7% on average did not notice any differences. As expected, according to previous research (e.g. Kraus, Castonguay, Boswell, Nordberg & Hayes, 2011; Leitner et al., 2012), the outcome of psychotherapy is mostly positive, but unfortunately, in some participants, a negative change in overall satisfaction with life has been shown. Similar results were also obtained in the Austrian study (Leitner et al., 2012), which found that between 10 and 20% of participants had a deterioration. At this point, it should be noted that the change in general life satisfaction is also caused by other life domains, which we did not capture in the study. For the conclusion, that the change is caused only by psychotherapy, other confoundable variables should be controlled. In interpreting the results and determining the factors that influence the deterioration, we have to be very careful, as we obtained only the subjective perception of the process and the outcome of the clients. We address the importance of awareness of the existence of harmful side effects and the need to explore them further in psychotherapy.

Emotions such as anger, hatred, fear and sexual attraction are largely neglected in psychotherapy research. About the critical events that occurred in psychotherapy 97.2% of participants never engaged in psychotherapist dealings or provided contacts for their reasoning, 2.8% of them responded once. Despite this small number, it must never happen in the psychotherapeutic process, as it is a relationship in which a psychotherapist helps the client and not the other way around. Psychotherapist should never use his relationship with client for his own benefit, as he abuses the client's trust and exploits his position as a trustee. 82.2% of the participants reported that they were never so upset after the psychotherapeutic meeting that they needed help, 9.3% reported that once and 8.4% felt that way more than once. This should be further studied in further research, since the therapist's task...
is to provide the client with a satisfied feeling when leaving the therapy. When asked if they were afraid that physical violence would occur between them and the psychotherapist, 95.3% of respondents answered no, 2.8%, once and 1.9% repeatedly. In further research, this aspect should be studied in greater detail, since it is certainly the desire of all psychotherapists that there would be no such participants, but different therapies and problems intertwine between therapist and client during psychotherapy. It is important that a psychotherapist confronts these problems together with their client, and in case of unsolvable problems, the therapist refers client to another professional. In the end, we touched upon the erotic appeal, while 88.8% of participants did not feel erotic attraction to the psychotherapist, while 6.5% of the participants realized that they were sexually attracted to them. The results are very similar to that of Leitner et al. (2012), in which slightly more than 13% of participants reported erotic attraction to the therapist, and almost 8% of them felt that they themselves felt attractive to the psychotherapist. According to Možina (2009), the borderline intimacy between therapist and client is very thin and there is a great need to recognize and preserve the borders and also to solve the conflicts and questions that arise with different clients. One participant in the study reported an erotic, sexual contact between her and the psychotherapist. We would like to point out that the purpose of the research is to draw attention to the responsibility of therapists to maintain the boundaries of the working alliance, irrespective of the behaviour of the client, as the therapist in the process has privileged access to a client's personal life, which is not reciprocal, and must follow the principles of professionalism and confidentiality. In doing so, a therapist must never use the client to meet his own needs, which he certainly does with sexual intercourse, despite the clients consent.

Research on the outcomes of psychotherapy offers professionals in this field broad knowledge, but they have limitations that make it difficult to generalize the results obtained and conclude on a causal relationship. Restrictions constitute a threat to internal and external validity. At internal validity, this is reflected in linking the outcome of psychotherapy to the psychotherapy process. External validity problems are reflected in the limits of the generalization of results. Research based on the method of randomly controlled selection has shown that individuals who attend psychotherapy report consistently greater satisfaction with life than those who do not attend therapy. However, they failed to prove whether the effects were due to therapy or merely a meeting with a client-centered person who is friendly and empathetic (Lambert & Ogles, 2016). In our research, we tried to follow already conducted research in the international arena, so we decided to use the Austrian questionnaire, which covers a wide range of effects and other factors in the process of psychotherapy. Despite our efforts, the final number of participants was small, as psychotherapy may still be a topic of caution for some people. Despite being provided with anonymity some are hesitant to reply. Due to the abovementioned obstacles and a small number of participants, these results should not be generalized to participants in psychotherapy in Slovenia, but psychotherapists nevertheless can
receive certain feedback that they can take into account in their work. The psychotherapeutic effects of the psychotherapist and the client are perceived differently. In our research, we focused solely on the subjective perception of clients who answered the questionnaire for the needs of the research. It should be noted that there is a problem at this point as the effects of psychotherapy are measured over a period of time for several months or years, depending on the duration of therapy, and there may be a problem in remembering the process and effects of psychotherapy (Frommer & Rennie, 2001). Otherwise, the participants are most likely to remember whether psychotherapy was effective or not, but they may have problems in remembering if a few years have passed since the end.

The study also provides useful feedback for conducting further research on the risks of psychotherapy that are lacking in our health, although they are indispensable for ensuring high standards of quality for the psychotherapist's work. In the direction of reducing the harmful effects of psychotherapy, it would be important, in the context of the education of psychotherapists, to introduce into the education itself the significance of sensitivity to harmful processes in psychotherapy and the need for and guidance for an adequate response to these, as this is crucial for the success of therapy.

**Conclusion**

The prevailing opinion so far is that in the worst case, psychotherapy has no effect, or the process itself has not led to a positive change. However, research (e.g. Ladwig, Rief & Nestoriuc, 2014; Lambert, 2002; Leitner et al., 2012) suggest that psychotherapy, in addition to all its positive effects, can also have negative side effects and that there are potential risk factors. Of course, it is essential to take into account that potential risk factors are possibly in the client's external environment. However, there are some risk factors that can be affected by the psychotherapist himself, with his education and professionalism. It is also unfair from clients to expect too much from therapists. They should be both aware and alert of potential negative effects during the process (Ladwig, Rief & Nestoriuc, 2014).

In future research, following the “medical paradigm”, it would be necessary to define more precisely different concepts such as failure of treatment, therapeutic risk, side effects, and unification of the use of these terms (Ladwig, Rief & Nestoriuc, 2014). Guidelines would certainly be useful in training future psychotherapists, and would also relieve unrealistic expectations, both to client and therapist. The research aims to stimulate new studies in the field of detecting various outcomes of psychotherapy, thus raising the standards of psychotherapy and providing greater protection for clients.
Literature


ANXIETY AND DEPRESSION ARE COMMON IN HEART PATIENTS. WELL IS THERE ANY INTERACTION BETWEEN THE TYPE OF INTERVENTION AND ANXIETY/DEPRESSION LEVEL? HEART PATIENTS NEED PSYCHIATRIC REHABILITATION

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Abstract

Background: The psychological effect of the phrase “a stent was inserted” or “a vessel was changed” was evaluated in this study. The patients who were treated electively in the Cardiology and Cardiovascular Surgery Clinics were compared with Beck’s Anxiety and Depression Scale.

Objective: The study aimed to investigate the prevalence of anxiety disorders and depression symptoms in cardiac patients. Also, the psychological reflections of treatment were observed.

Material and Methods: Patients who were treated at Kutahya Evliya Celebi Training-Research Hospital with an elective angiography and stent insertion or an elective bypass operation between January 2015 and December 2017 were included in the study. The post-treatment psychological status was compared using Beck Anxiety and Depression Scale forms, which were filled by the patients who were invited to the outpatient clinics for a post-treatment visit in the week following their discharge from the hospital. The data were analyzed using the Chi-square and Mann-Whitney U test, where appropriate. A p-value less than 0.05 was accepted as statistically significant.

Results: One hundred ninety-two patients from the cardiology department and 170 patients from the cardiovascular surgery department included. Mild anxiety disorder was the most frequently noted disorder among the cardiology group (64.1%). Minimal, mild, and moderate level depression were found to be approximately 31.8, 32.8 and 33.9 percent, respectively. Among patients who underwent cardiovascular surgery, 62.4 percent had mild anxiety and 67.1 percent had minimal depression, from which it can be understood that the rates

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of anxiety and depression symptoms were found to be higher in the cardiology patients than in the cardiovascular surgery group.

**Conclusion:** Bypass surgery can be considered troublesome due to the risks of mortality, morbidity and the challenging postoperative recovery period. But the perception of “vessel change” makes the patients more comfortable and peaceful.

**Keywords:** Anxiety, Depression, Coronary artery bypass surgery, Coronary artery disease

1. Introduction

One of the most common causes of death in the world is cardiovascular disease (CVD)\(^1\), which, when combined with mood disorders, emerges as a social problem rather than being only a disease that affects the individual\(^2\). In many studies, the rate of anxiety and depression was demonstrated to be increased in individuals with CVD\(^3\). Depression affects the sympathetic and parasympathetic nervous systems, and increases cortisol levels while decreasing serotonin levels, and may cause cardiac arrhythmia and ischemic cardiac diseases\(^4\). This may affect the course and severity of CVD, and thus mood disorders have been regarded as independent risk factors with CVD\(^2,5\).

One suggested treatment for coronary artery disease is coronary artery bypass surgery (CABG), although the disadvantages of this treatment include the high risk of the operation and long healing times. Coronary stenting, as another form of treatment, is less exhausting on the patient’s body, since it is less invasive and preserves tissue integrity. The appropriate treatment method is selected based on the atherosclerosis proportion results of angiography of the patient. Patients should be followed-up throughout their lives, regardless of the type of treatment applied. Patients evaluate the situation as “a stent was inserted” or “a vessel was changed” following CABG and percutaneous interventions, respectively. Based on these findings, this study aims to investigate the effects of the idea of changing something or repairing something on the mood of the patients.

Anxiety disorders can manifest in many ways. Therefore, measuring the level of anxiety is more difficult than determining the severity of depression. Also, general rating scales may not provide sufficient information on some types of anxiety (i.e generalized anxiety disorder, panic disorder). Considering the ability to measure general anxiety, simplicity and brevity Beck anxiety inventory is a useful scale to determine the severity of anxiety. Since this useful scale was described has been widely used as a severity indicator\(^6\). Eventually Beck anxiety inventory (Table 1) and Beck depression inventory (Table 2) help to determine mood disorder by asking short and clear questions.
Table 1. Beck Anxiety Inventory.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Not at all</th>
<th>Mildly but it didn’t bother me much</th>
<th>Moderately, it wasn’t pleasant at times</th>
<th>Severely, it bothered me a lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbness or tingling</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Feeling hot</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Wobbliness in legs</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Unable to relax</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Fear of worst happening</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Dizzy or lightheaded</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Heart pounding/racing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Unsteady</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Terrified or afraid</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Nervous</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Feeling of choking</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Hands trembling</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Shaky/unsteady</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Fear of loosing control</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Difficulty in breathing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Fear of dying</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Scared</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Indigestion</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Faint/lightheaded</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Face flushed</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Hot/cold sweats</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Score</th>
<th>Anxiety Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-7</td>
<td>Normal</td>
</tr>
<tr>
<td>8-15</td>
<td>Mild</td>
</tr>
<tr>
<td>16-25</td>
<td>Moderate</td>
</tr>
<tr>
<td>26-63</td>
<td>Severe</td>
</tr>
</tbody>
</table>
Table 2. Beck Depression Inventory.

Beck’s Depression Inventory This depression inventory can be self-scored. The scoring scale is at the end of the questionnaire.

1. 0 I do not feel sad.
   1 I feel sad
   2 I am sad all the time and I can’t snap out of it.
   3 I am so sad and unhappy that I can’t stand it.

2. 0 I am not particularly discouraged about the future.
   1 I feel discouraged about the future.
   2 I feel I have nothing to look forward to.
   3 I feel the future is hopeless and that things cannot improve.

3. 0 I do not feel like a failure.
   1 I feel I have failed more than the average person.
   2 As I look back on my life, all I can see is a lot of failures.
   3 I feel I am a complete failure as a person.

4. 0 I get as much satisfaction out of things as I used to.
   1 I don’t enjoy things the way I used to.
   2 I don’t get real satisfaction out of anything anymore.
   3 I am dissatisfied or bored with everything.

5. 0 I don’t feel particularly guilty
   1 I feel guilty a good part of the time.
   2 I feel quite guilty most of the time.
   3 I feel guilty all of the time.

6. 0 I don’t feel I am being punished.
   1 I feel I may be punished.
   2 I expect to be punished.
   3 I feel I am being punished.

7. 0 I don’t feel disappointed in myself.
   1 I am disappointed in myself.
   2 I am disgusted with myself.
   3 I hate myself.

8. 0 I don’t feel I am any worse than anybody else.
   1 I am critical of myself for my weaknesses or mistakes.
   2 I blame myself all the time for my faults.
   3 I blame myself for everything bad that happens.

9. 0 I don’t have any thoughts of killing myself.
   1 I have thoughts of killing myself, but I would not carry them out.
   2 I would like to kill myself.
   3 I would kill myself if I had the chance.

10. 0 I don’t cry any more than usual.
    1 I cry more now than I used to.
    2 I cry all the time now.
    3 I used to be able to cry, but now I can’t cry even though I want to.

11. 0 I am no more irritated by things than I ever was.
    1 I am slightly more irritated now than usual.
    2 I am quite annoyed or irritated a good deal of the time.
    3 I feel irritated all the time.

12. 0 I have not lost interest in other people.
    1 I am less interested in other people than I used to be.
    2 I have lost most of my interest in other people.
    3 I have lost all of my interest in other people.

13. 0 I make decisions about as well as I ever could.
    1 I put off making decisions more than I used to.
    2 I have greater difficulty in making decisions more than I used to.
    3 I can’t make decisions at all anymore.

14. 0 I don’t feel that I look any worse than I used to.
    1 I am worried that I am looking old or unattractive.
    2 I feel there are permanent changes in my appearance that make me look unattractive.
    3 I believe that I look ugly.
15. 0 I can work about as well as before.
   1 It takes an extra effort to get started at doing something.
   2 I have to push myself very hard to do anything.
   3 I can't do any work at all.

16. 0 I can sleep as well as usual.
   1 I don't sleep as well as I used to.
   2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
   3 I wake up several hours earlier than I used to and cannot get back to sleep.

17. 0 I don't get more tired than usual.
   1 I get tired more easily than I used to.

18. 0 My appetite is no worse than usual.
   1 My appetite is not as good as it used to be.
   2 My appetite is much worse now.
   3 I have no appetite at all anymore.

19. 0 I haven't lost much weight, if any, lately.
   1 I have lost more than five pounds.
   2 I have lost more than ten pounds.
   3 I have lost more than fifteen pounds.

20. 0 I am no more worried about my health than usual.
    1 I am worried about physical problems like aches, pains, upset stomach, or constipation.

21. 0 I have not noticed any recent change in my interest in sex.
    1 I am less interested in sex than I used to be.
    2 I have almost no interest in sex.
    3 I have lost interest in sex completely.

**Total Score**

<table>
<thead>
<tr>
<th>Depression Level</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal</td>
<td>0-9</td>
</tr>
<tr>
<td>Mild</td>
<td>10-16</td>
</tr>
<tr>
<td>Moderate</td>
<td>17-29</td>
</tr>
<tr>
<td>Severe</td>
<td>30-63</td>
</tr>
</tbody>
</table>

### 2. Material and Methods

During planning the study, we calculated the sample size of each group as 105 subjects for a two-tailed study within a 95% confidence interval and an alpha error at the 0.05 level using G*Power version 3.1.9.4 software by Franz Faul, Kiel University, Germany.

Patients treated at the Clinics of cardiovascular surgery and cardiology between January 2017 and December 2018 were included in this study. The study was approved by an institutional review committee and that the subjects gave informed consent (Dumlupinar University Ethics Committee, 2016 5/5). Patients, who were hospitalized with ischemic symptoms and fitted with a stent following an elective angiography, irrespective of the New York Heart Association (NYHA) classification (Group 1), and patients who underwent an elective CABG following the angiography (Group 2) were included in the study. Patients with CAD and those treated under emergency conditions were excluded from the study, as were patients who suffered complications or who underwent recurrent interventions. In addition, patients who had received or who were under psychiatric treatment were also excluded from the study. We only focused on psychiatric disorders and other diseases (diabetes mellitus, renal failure, peripheral vascular disease etc.) were not considered. Both groups of patients were invited for a follow-up visit one week after...
their discharge following treatment, when they were asked to fill out Beck Anxiety and Beck Depression scale forms which can be used for scoring the state of psychiatric health\cite{6,7,8}, giving the most appropriate answer to the questions on the forms. The patients were left alone in a quiet room to prevent the potential effects of environmental conditions. Illiterate patients were assisted by informed personnel.

2.1. Statistical analysis

The data garnered from the questionnaires was uploaded into the IBM SPSS 21.0 package program, and frequency, Chi-Square test and Mann-Whitney U-tests were used for data interpretation. Power analyses were performed by using G*Power 3.1.9.4.

3. Results

Between the aforementioned period, 5218 patients were treated in both clinics. Total number of patients in group 1 was 192, whereas there were 170 patients in the latter group. The gender distribution between the groups was not statistically significant ($\chi^2=2.135$, $p=0.144$). In group 1 (n=192, 124 males and 68 females, 67.6±12.4 years), according to the answers given by the patients to the anxiety scale, the mean value of sweating complaints based on factors other than heat was found to be 1.33, as the highest mean value, while the lowest mean value was 0.54 for complaints of shivering.

Palpitation complaints held the highest mean value with 0.92, according to the answers given by the patients in group 2 (n=170, 122 males and 48 females, 63.8±10.7 years) to the anxiety scale. The lowest mean value was 0.33 for being possessed by fear.

The frequency values of group 1 demonstrate that anxiety levels were mild and severe in 123 patients (64.1%) and 21 patients (10.9%) respectively. On the other hand, anxiety levels were mild in 106 patients (62.4%) and severe in 2 patients (1.2%) according to the results of the frequency values in group 2 (Figure 1).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure1.png}
\caption{Distribution of patients according to the anxiety scores within the groups (p=0.000).}
\end{figure}
The Depression Level was found to be minimal (n=61, 31.8%), mild (n=63, 32.8%) and moderate (n=65, 33.9%) in group 1. On the other hand, depression levels were found to be minimal (n=114, 67.1%), mild (n=29, 17.1%) and moderate (n=26, 15.3%) in group 2 (Figure 2).

**Figure 2.** Distribution of patients according to the depression scores within groups (p=0.000).

The frequency values reveal that the levels of mild anxiety were similar in both groups, while severe anxiety levels were seen more in group 1 than in group 2. Furthermore mild and moderate levels of depression were seen to be more common in group 1.

The analyzes showed that patients in group 1 had much more inquietude. Both anxiety and depression levels were statistically higher in group 1 (Table 3).

**Table 3.** Chi-square test results of anxiety and depression levels between the two groups.

<table>
<thead>
<tr>
<th></th>
<th>Anxiety Level</th>
<th>Depression Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \chi^2 )</td>
<td>38.293</td>
<td>58.915</td>
</tr>
<tr>
<td>( p )</td>
<td>0.000*</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

* Statistically significant.

Patients were categorized as \( \leq 65 \) years of age and \( > 65 \) years to evaluate the relationship between age and anxiety / depression. Age distribution was significantly different between the two groups (\( \chi^2 = 4.331, p = 0.037 \)). Most of the patients in group 1 were older than 65 years old, whereas the patients in group 2 were mostly younger. When all of 362 patients were evaluated, it was seen that the anxiety and depression rates of the patients under 65 years were higher (p=0.013) (Table 4).
### Table 4. Chi-square test results of anxiety and depression according to age and gender distribution between the two groups.

<table>
<thead>
<tr>
<th>Anxiety Level</th>
<th>Depression Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Gender</td>
</tr>
<tr>
<td>10.747</td>
<td>3.407</td>
</tr>
<tr>
<td>10.261</td>
<td>2.694</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.013*</td>
<td>0.333</td>
</tr>
<tr>
<td>0.016*</td>
<td>0.441</td>
</tr>
</tbody>
</table>

* Statistically significant.

When the groups were examined separately, the anxiety rate was found to be high in ≤ 65 years old patients (p=0.000) in group 1 but no significant relationship was found between age and depression (p=0.788) (Table 5). In group 2 age was not related to anxiety (p=0.810) or depression (p=0.199) (Table 6).

### Table 5. Chi-square test results of anxiety and depression according to age and gender distribution in Group 1.

<table>
<thead>
<tr>
<th>Anxiety Level</th>
<th>Depression Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Gender</td>
</tr>
<tr>
<td>21.498</td>
<td>1.056</td>
</tr>
<tr>
<td>5.993</td>
<td>1.869</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000*</td>
<td>0.788</td>
</tr>
<tr>
<td>0.112</td>
<td>0.600</td>
</tr>
</tbody>
</table>

* Statistically significant.

### Table 6. Chi-square test results of anxiety and depression according to age and gender distribution in Group 2.

<table>
<thead>
<tr>
<th>Anxiety Level</th>
<th>Depression Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Gender</td>
</tr>
<tr>
<td>0.965</td>
<td>5.745</td>
</tr>
<tr>
<td>4.653</td>
<td>4.311</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.810</td>
<td>0.125</td>
</tr>
<tr>
<td>0.199</td>
<td>0.230</td>
</tr>
</tbody>
</table>

No relation was found between gender and anxiety / depression when all patients were examined together or in groups (Table 4, Table 5, Table 6).

The actual power of analysis we achieved was 99.7%, calculated using the G*power software.

### 4. Discussion

The American Heart Association (AHA) recommends that depression be evaluated in cardiac patients, as one of the most frequently seen diseases in the developing world, by routine screening[^9^], and it is also seen frequently following CABG[^10^]. The majority of the patients included in the study had mild/moderate anxiety and depressive disorder, this finding is similar to other studies[^10,11^].
Previous studies have demonstrated that patients with chronic depression following treatment tended to have had longer hospital stays, higher mortality and morbidity and poorer health status in long-term follow-up\textsuperscript{[11,12]}. In our case, the postoperative hospitalization period was not included in the study. However, patients in both groups were selected from elective cases without complications; It was evaluated that the duration of hospitalization did not have a negative effect on psychological health. In addition, individuals with CAD and depression were found to have a higher rate of recurrent presentation to the hospital with coronary complaints\textsuperscript{[13,14,15,16]}. We left the recurrent presentations to the hospital as a separate study topic.

When the groups were compared among themselves, it was seen that Group 1 had higher rates of anxiety and depression. Heart disease treatment is done by cardiologists. If coronary surgery is needed then surgeons are included. In other words, patients meet cardiologists first and then cardiovascular surgeons. Also, some of the patients in Group 1 still can not accept to be a heart patient. This may be the reason why patients in Group 1 have higher levels of anxiety and depression. Our other thesis is telling of ‘changing atherosclerotic vessels with new ones by CABG gives patients more psychiatric comfort. And this is why Group 2 has less anxiety and depression than Group 1.

Women are delicate entities. They carry love in their hearts and souls, and it is easier to hurt them. Many studies are showing that women have lost their psychological health easier\textsuperscript{[17,18]}. In contrast in the present study, no significant association was found between gender and a depression/anxiety tendency in Group 1, while in Group 2, anxiety levels were found to be slightly higher in males, although there was no significant difference between the males and females in terms of depression levels. The majority of adult Turkish men are known to have credit debts. This may cause psychologic discomfort on the male gender. We can link the high level of anxiety in men to this social reason.

Young patients have more plans and expectations about life. Therefore life-threatening diseases can have a more devastating effect on young patients. This situation has been revealed as a result of the statistical analysis of our study. We found that the rate of anxiety/depression in patients ≤ 65 years of age was higher. These results are coherent with the literature studies\textsuperscript{[17,19]}. The AHA recommends the screening of patients with CAD for these disorders since they have been proven to increase mortality and morbidity among such patients. The hypothesis of this study, which suggests that stents occupy the minds of the patients and keep them psychologically engaged since they stay in the body, is confirmed by statistical results. Accordingly, we suggest that CVS and Cardiology patients, and particularly those who have been treated with a stent insertion, should undergo psychological rehabilitation therapy.
5. Conclusion

The coronary bypass operation is absolutely eerie. It has a risk of death and chronic complications such as lung failure, renal failure or cerebrovascular disease. But there is a great relief in people after passing through this difficult road. The idea that the occluded vessels are replaced by new vessels is also a source of morale for patients.

6. References:


8) Frasure-Smith N, Lespérance F Depression and anxiety as predictors of 2-year cardiac events in patients with stable coronary artery disease: Correction. JAMA Psychiatry 2015;72(8), 851.


